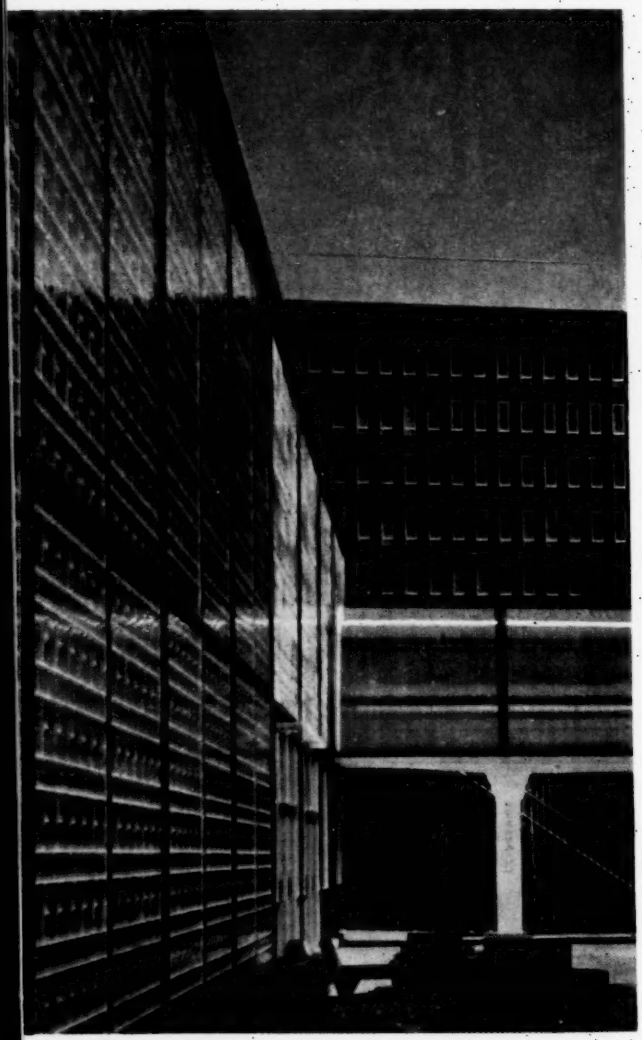
Price 35 cents

Chemical Week

August 2, 1958



Auguring an upturn? Sales surge brightens second-quarter CPI reports . . . . . p. 21

Cash in on car-wash specialties. Here's the market and how to sell it . . . . . p. 31

Wanted: plant-site seekers. State planning groups offer raft of new lures . . . . p. 35

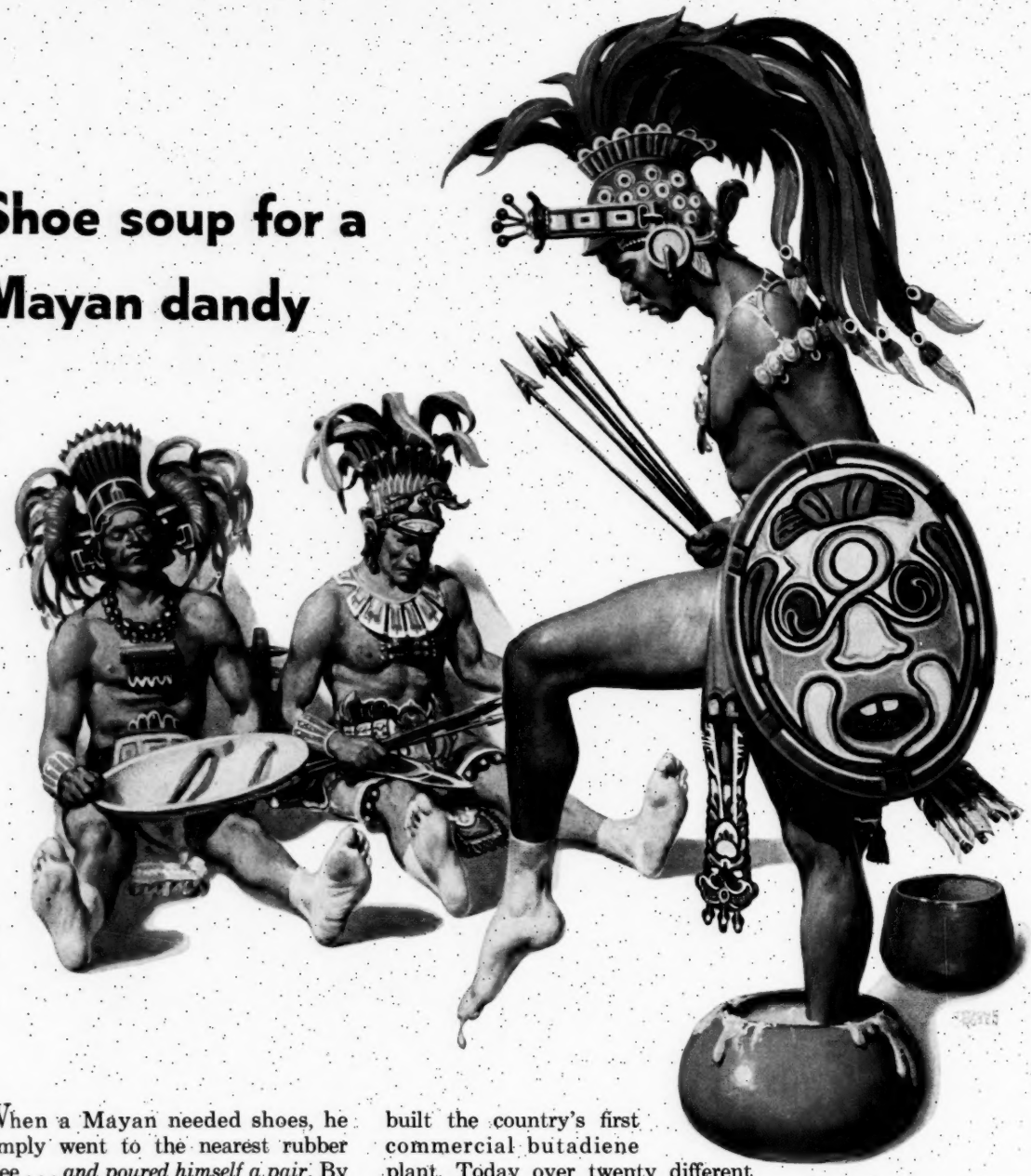
Trust your technicians with more jobs. Three ways it can pay off . . . . . p. 41

The trend is to glass. Producers ready new capacity for pick-up in construction, autos . p. 60

ANN ARBOR MICH
313 N 1ST ST
UNIVERSITY MICROFILMS I
E P POWER

A McGRAW-HILL PUBLICATION

Shoe soup for a Mayan dandy



When a Mayan needed shoes, he simply went to the nearest rubber tree . . . *and poured himself a pair.* By dipping his feet repeatedly into a bath of raw latex, he fashioned a kind of shoe. The style was crude, but the fit was perfect.

Rubber goods have come a long way since then, and the development of *synthetic* rubber has been an important factor in this growth—especially since 1941 when Shell Chemical built the country's first commercial butadiene plant. Today over twenty different types of Shell synthetic rubber go into such varied products as shoe soles and heels, tires, belting, floor tile, wire and cable insulation, and hundreds more.

Commercial production of this strong and versatile material is another of the many ways Shell Chemical helps industry with man-made raw materials.

The Mayan and other Indians of Latin America discovered a unique material for making clothing and footwear.

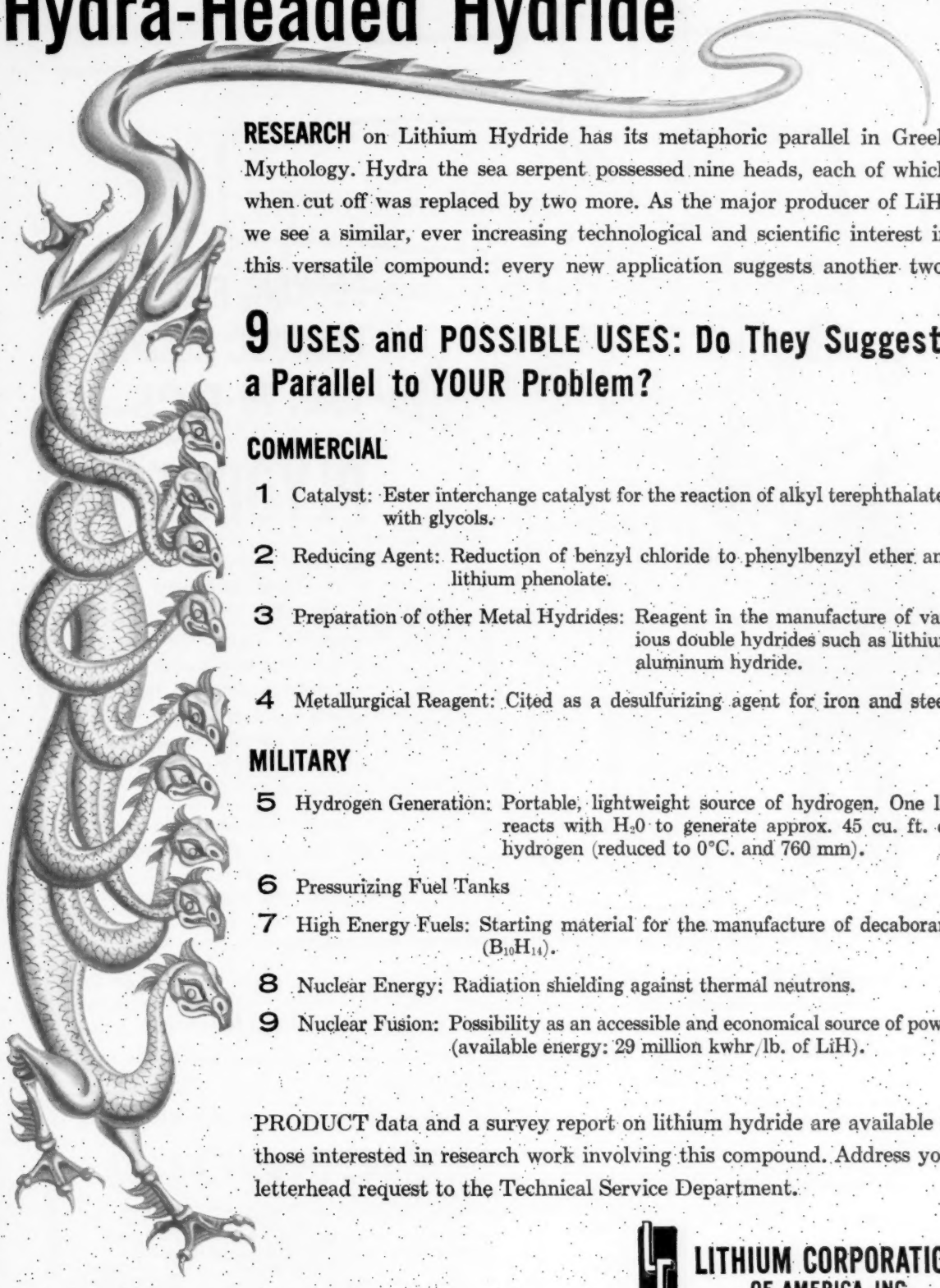
SHELL

Shell Chemical Corporation

Chemical Partner of Industry and Agriculture

TORRANCE, CALIFORNIA

Hydra-Headed Hydride



RESEARCH on Lithium Hydride has its metaphoric parallel in Greek Mythology. Hydra the sea serpent possessed nine heads, each of which when cut off was replaced by two more. As the major producer of LiH, we see a similar, ever increasing technological and scientific interest in this versatile compound: every new application suggests another two.

9 USES and POSSIBLE USES: Do They Suggest a Parallel to YOUR Problem?

COMMERCIAL

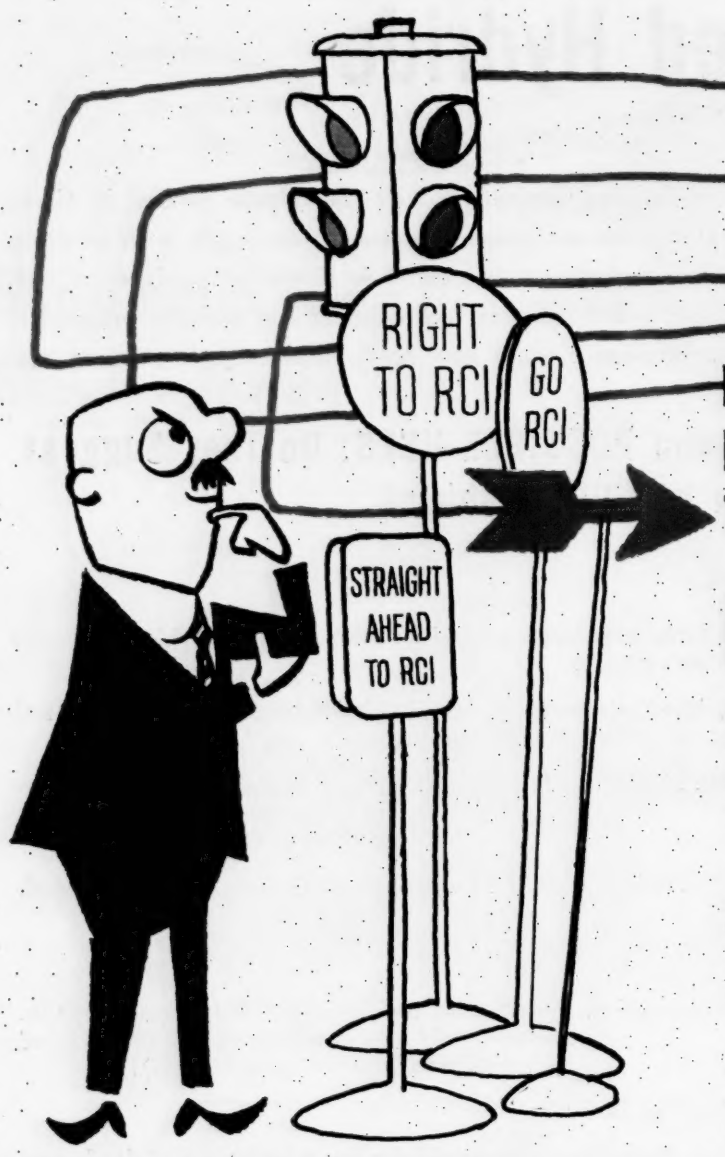
1. Catalyst: Ester interchange catalyst for the reaction of alkyl terephthalates with glycols.
2. Reducing Agent: Reduction of benzyl chloride to phenylbenzyl ether and lithium phenolate.
3. Preparation of other Metal Hydrides: Reagent in the manufacture of various double hydrides such as lithium aluminum hydride.
4. Metallurgical Reagent: Cited as a desulfurizing agent for iron and steel.

MILITARY

5. Hydrogen Generation: Portable, lightweight source of hydrogen. One lb. reacts with H_2O to generate approx. 45 cu. ft. of hydrogen (reduced to 0°C. and 760 mm).
6. Pressurizing Fuel Tanks
7. High Energy Fuels: Starting material for the manufacture of decaborane ($B_{10}H_{14}$).
8. Nuclear Energy: Radiation shielding against thermal neutrons.
9. Nuclear Fusion: Possibility as an accessible and economical source of power (available energy: 29 million kwhr/lb. of LiH).

PRODUCT data and a survey report on lithium hydride are available to those interested in research work involving this compound. Address your letterhead request to the Technical Service Department.

LITHIUM CORPORATION OF AMERICA, INC.
1102 TITLE INSURANCE BUILDING
MINNEAPOLIS 1, MINNESOTA



LOOKING FOR PHENOLIC RESINS? TURN TO RCI PLYOPHENS

For the phenolic resins you need in your bonding, laminating, impregnating or casting operations, it's good business to go *direct* to RCI . . . a proven source for dependable, high quality liquid and powdered phenolics carefully formulated to meet specific production requirements.

For full information on how RCI PLYOPHENS can best serve your individual needs, clip and mail the check list below.

There's an RCI PLYOPHEN for Every Major Application!

- ☐ Brake Linings
- ☐ Resinoid Grinding Wheels
- ☐ Wood Waste Molding
- ☐ Decorative Laminate Core Stock
- ☐ Casting
- ☐ Hot Punching Stock
- ☐ Cold Punching Stock
- ☐ Gear Stock
- ☐ Rolled Tubing
- ☐ Insulation Bonding
- ☐ Plastic Faced Plywood
- ☐ Shell Molds
- ☐ Shell Cores
- ☐ Surface Coating

Please send me full technical information on the use of RCI PLYOPHEN Phenolic Resins for the applications I have indicated at left.

My name is _____

I am _____ (TITLE)

of the company indicated on this letterhead.

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Synthetic Resins • Chemical Colors • Industrial Adhesives • Phenol
Hydrochloric Acid • Formaldehyde • Glycerine • Phthalic Anhydride
Maleic Anhydride • Sebacic Acid • Ortho-Phenylphenol • Sodium Sulfite
Pentaerythritol • Pentachlorophenol • Sodium Pentachlorophenate
Sulfuric Acid • Methanol

Creative Chemistry . . . Your Partner in Progress

REICHHOLD CHEMICALS, INC.,
RCI BUILDING, WHITE PLAINS, N.Y.

Chemical Week

TOP OF THE WEEK **AUGUST 2, 1958**

- **India's worsening fiscal plight has not halted chemical growth,** but it may cripple raw-material imports ..... **p. 24**
- **New data shows slip in chemical industry's safety record,** underscores need for constant attention to safety program **p. 51**
- **Hoko nitric acid process wins new attention.** Coproducts: nitrogen oxides for possible rocket-fuel use ..... **p. 67**
- **Alkyd resin makers ponder how to bolster sales** to paint industry in face of rugged competition from latex makers ... **p. 71**

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Because of their tax-favored position, co-ops can undercut prices on fertilizer raw materials for noncaptive use.

17 BUSINESS NEWSLETTER
Second-quarter earnings are up slightly from first quarter. Though well under '57 earnings, they generally cover dividend payments.

23 New missile contract is big trophy for makers of solid, double-base propellents.

23 Industry spokesmen uphold MCA labeling code over medical group's "model" law.

24 Chemical process companies in India go ahead with plant building despite country's fiscal plight.

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Booming specialties market: the nation's 4,000 auto laundries. Last year they bought about $5,000 worth of cleaning compounds each.

35 ADMINISTRATION
Better bargains for plant site hunters could result from competition by states for new industry.

35 AMA's survey finding: middle-management men in chemical industry, as a group, draw higher salaries than counterparts in other industries.

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Chemical industry's safety record in '57 not up to that of '56, according to new National Safety Council figures.

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Flat glass sales chipped by fall in construction, auto production. But containers are "recessionproof," and industry continues expansion plans.

67 ENGINEERING
Hopes for U.S. debut of Hoko nitric acid process rest on method's ability to produce wide range of acid concentrations, coproduct oxides.

71 SALES
Alkyd resin producers try three-part plan for bolstering sluggish sales to coatings industry.

74 CHARTING BUSINESS
Just-out figures show U.S. imported $24 million worth of coal-tar products last year—58% more than in '56.

Cover Picture—Corning Glass Center—Photo by Francis Preissler, courtesy of Pittsburgh Plate Glass Co.

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No. 5

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T F

Precision Press Forgings (as well as Hammer Forgings and Extrusions) are made in quantity on a production basis as missile, rocket and engine components, heavy machinery parts, etc. This 64¾" OD x 1½" wall thickness press-forged stainless steel part is a Heat Sink for a long range missile.

TAYLOR

This 42" OD x 16" long Stainless Steel Jet Engine Turbine Case is representative of products formed by Taylor Forge ring rolling methods. Seamless rings are made in sizes to 120" OD with practically any required section.

Forged Headers with contoured outlets, made with any required outlet arrangement, are widely used for valve settings, gas compressor station manifolds, scraper traps, refinery charge heater headers, and many other applications in gas, oil and process piping. They are also made in heavy wall thicknesses for high pressure-temperature central power station service.

Electric Fusion Welded Pipe is made in sizes from 14" OD to 96" OD with wall thicknesses to 1.531", and in a variety of materials (including stainless and alloy steels). This pipe offers many opportunities for substantial economies, particularly in high pressure-temperature services and also in pipeline river crossings and other applications involving special design requirements. Pipe pictured is 16" OD x 1" wall thickness and is stainless steel.

SERVING INDUSTRY with many essential products

FORGE

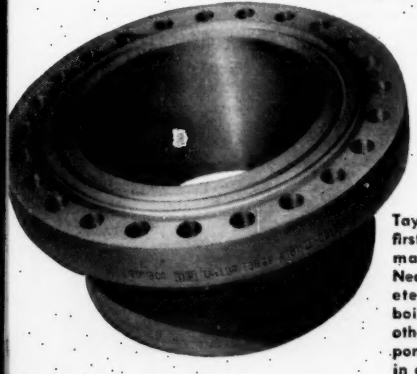
Traditionally Dependable

Perhaps you think of Taylor Forge only as a maker of highest quality Welding Fittings and Forged Flanges—and certainly they are most important lines with us. But Taylor Forge is also an outstanding producer of many other less widely known though equally essential products.

The few examples pictured here are representative of the many diverse parts made by Taylor Forge to serve American Industry. One thing they have in common is the dependability, the integrity, that has always been associated with the name TAYLOR FORGE.

Taylor Forge & Pipe Works

General Offices and Works: P. O. Box 485, Chicago 90, Illinois
Plants at: Carnegie, Pa., Gary, Ind., Houston, Texas, Fontana, Calif., Hamilton, Ont., Canada
District Sales Offices: New York, Boston, Philadelphia, Pittsburgh, Atlanta, Chicago, Houston, Tulsa, Los Angeles, San Francisco, Seattle, Toronto, Calgary, Montreal.



Taylor Forge was America's first and is still the foremost manufacturer of Welding Necks, Nozzles, Large Diameter Flanges and similar boiler, heat exchanger and other pressure vessel components. Such parts are made in any size and material for any service condition.

Spiral-Weld Pipe, our original product, (first made as spiral riveted pipe nearly 60 years ago), remains to this day a major item and its use continues to expand. Its money saving features are widely recognized in services such as gas gathering lines; gas, oil and water well casing; irrigation pipe; water piping in sand, gravel and mining operations; and in fact, wherever the use of light weight pipe is indicated. It is also widely used as pipe piling.

LIMESTONE UNLIMITED!

- **For Heavy Chemicals**
- **For Chemical Lime**
- **For Cement**
- **For Other Industrial Needs**

in The Land of Plenty

Your new plant won't go hungry for limestone in *The Land of Plenty* . . . the progressive six-state territory served by the Norfolk and Western Railway. There's plenty of it — more than 100 million tons in one location alone — and it is 97.8 per cent pure!

The beds, ranging upward to 100 feet in thickness, can be mined or quarried economically. There are excellent industrial building sites nearby in an area providing plenty of water, power and dependable home-rooted workers, plus N&W Precision Transportation.

Get the full facts on *The Land of Plenty* and its limestone deposits from N&W plant location specialists. Your inquiry will be handled promptly . . . in strictest confidence and without obligation.

And here are typical analyses *

	DHL-1-1	DHL-1-2	DHL-1-3
Silica (SiO_2)	.36%	.30%	.34%
Iron Oxide (Fe_2O_3)	.072	.043	.049
Alumina (Al_2O_3)	.21	.20	.19
Lime (CaO)	55.00	54.90	55.40
Magnesia (MgO)	.65	.62	.51
Sulphur (S)	.012	.011	.015
Phosphorus (P)	.006%	.006%	.009%
Ignition Loss	43.20	43.50	43.20
Calcium Carbonate (Calculated)	97.90	97.72	98.51
Magnesium Carbonate (Calculated)	1.36	1.30	1.07

* Report prepared by Pittsburgh Testing Laboratories, Pittsburgh, Pa.

Write, Wire or Call —

L. E. Ward, Jr., Manager
Industrial and Agricultural Dept.
Drawer CW -803 (Phone Diamond 4-1451, Ext. 474)
Norfolk and Western Railway
Roanoke, Virginia

Norfolk and Western RAILWAY

For quick, competent assistance on shipping problems — talk with the N&W freight traffic Sales and Service representative nearest you . . . in one of 40 key cities across the U. S.

(Advertisement)

SPECIALTY MARKET BUILDERS *(from Monsanto)* . . . . . .

SANTOBRITE:
Versatile mold and mildew preventive

With summertime here, the nation's laundries are steaming lustily and again running head-on into a major profit-thief: mildew. In many sections of the country, damp linens pick up streaks and blotches that turn into a permanent dark grey-brown stain. Almost inevitably, mold follows humidity. Linen and diaper services are hardest hit because often practically new service items, such as tablecloths, napkins, and white uniforms, have to be excessively bleached, even discarded from service long before returning full wear.

An increasing number of commercial laundries are taking a leaf from heavy industry's book. They are controlling mildew with SANTOBRITE, a wheelhorse industrial biocide for over a quarter-century.

One large linen-supply company uses over a ton every month, claims the 0.05% SANTOBRITE in the final rinse (before the sour is added) saves up to 50% on the service life of their linens, saves about 20¢ worth of bleaching materials alone per hundred pounds of mildewed wash.

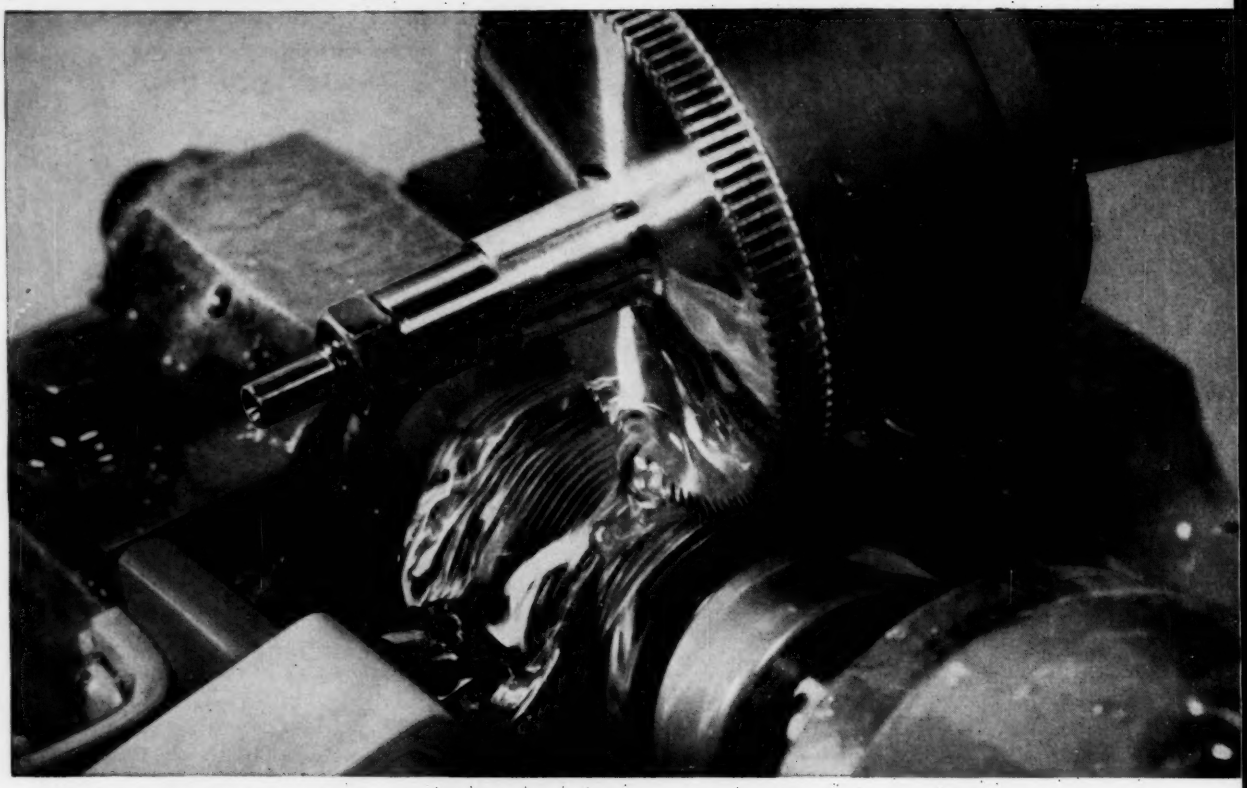
SANTOBRITE (sodium pentachlorophenate) is an old, "won't-do-without" type of chemical in a baker's dozen of industries. Available locally practically anywhere from leading chemical distributors—one of its most widespread uses is as a simple addition to circulating cooling water in refrigeration and air-conditioning systems. As little as 0.05%–0.10% keeps the water sweet, free of sour slime and algae. It is also used to preserve rubber latex, just 0.3% and 0.1% of ammonia, based on the weight of fresh latex protects against biological deterioration. SANTOBRITE serves the same purpose in the preservation of water-base paints, and in protein- and starch-base adhesives; has been used for decades to control slime and algae in paper mills. Laundries were one of the last industries to impress this cheap, easy-to-use preservative into service. And even today, only a few hundred out of the thousands of commercial laundries know that dependable mildew control is as simple as "bluing."

It works like this: A 20% "stock solution" of SANTOBRITE is made up, usually in 30-gallon lots. To each 50 gallons of final rinse water, 15 oz. of stock solution is added *before* the sour. The sour precipitates a tiny quantity of pentachlorophenate in the fabric . . . and this keeps damp, soiled tablecloths, nurses' uniforms, even diapers completely free of mildew.

A few aggressive specialty houses eyeing the laundry field have taken note of the opportunities in marketing stock solutions. Some rely on simply providing the extra convenience to the smaller laundry of ready-made concentrates; others are exploring possibilities of combining the mildew protectant with bluing, brighteners, ironing aids. In any event, both the specialty house and the distributor can supply the laundry market at a very satisfactory mark-up based on the price-per-pound differential in industrial-size orders.

As the heat and the humidity go up, so go the mold and mildew, and so also goes the growing demand for SANTOBRITE in a relatively new market. *Santobrite: Reg. T. M. Monsanto Chemical Co.*

For further information on SANTOBRITE for Laundry Mildew Control, request a copy of Chemical Specialties Data Report CS-9. For this and names of Santobrite distributors, write Monsanto Chemical Company, Organic Chemicals Division, Dept. CS-9, St. Louis 24, Missouri.



Exceptional lubricating properties make sperm oil an essential ingredient in high quality cutting oils for precision machining.

Industry Rediscovers Finest Lubricant

If you have high speed, high temperature industrial lubricating problems... or need a lubricant which plates out to give a strong and continuous film on metallic surfaces... ADM Spermoils are of interest to you. In addition, they meet the needs for a lubricant with an affinity for metallic surfaces and scarcely change viscosity through wide extremes of temperature.

Sperm oil is remarkable because it is largely made up of the higher fatty alcohol esters of the higher fatty acids.

It resists oxidation and is non-corrosive. Sperm oil's unsaturation is practically all mono-unsaturation. Each molecule of the ester contains but one double bond in each of the fatty acid and alcohol parts of the ester.

45° (N. W.) and 38° (N. W.)

Two particularly interesting ADM sperm oils are ADM 45° (N.W.) and ADM 38° (N.W.) Spermoil. The temperatures refer to maximum cloud point, or degrees F. at which first signs of cloudiness appear.

Both these oils are pressed, pale yellow liquids. Sperm oils are among the most stable, naturally derived oils. They resist decomposition even when heated up into the 400-500° F. range. They have a pour point about 2° below their cloud points. Below the pour point they remain in a semi-solid state down to extremely low temperatures.

Sulfurized Easily

ADM's Natural Winter Spermoils are sulfurized easily, making them especially fine as boundary lubricants, cutting oils, extreme pressure lubricants, crank case oils, and gear lubricants.

Many other problems . . . for example, leather treating, bimetal lubrication, rust prevention, and metal stamping . . . find new, better solutions in ADM Spermoils. Chances are you can use sperm oil profitably in your business, too. Perhaps Archer-Daniels-Midland, the world's largest and oldest processer and supplier of sperm oil can help you. Write today for 18-page bulletin which gives more facts plus locations of technical sales personnel nearest you. Ask for Bulletin 904A.

Why you can make better surfactants with ADM's Lauryl and Myristyl Adols

A good many people who have an interest in surface active agents feel a fondness for ADM's line of lauryl and myristyl alcohols . . . tradenamed Adols. They use them for anionic surfactants and cationic quaternary germicides and surfactants.

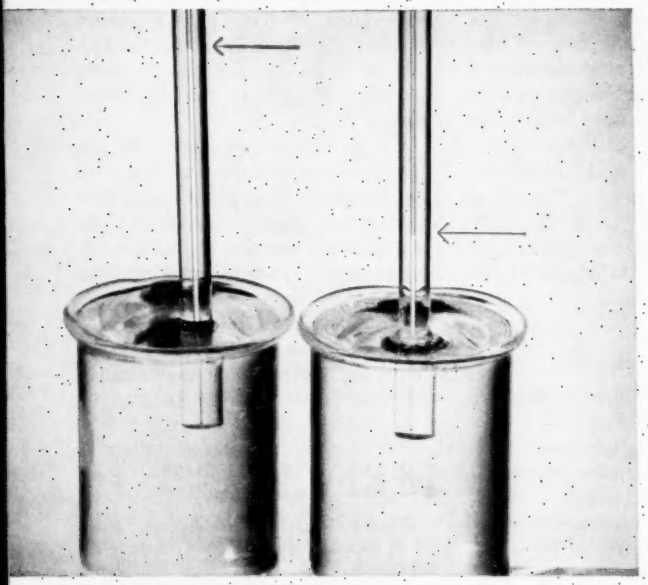
Some of the most often mentioned reasons for repeat orders on Adols include:

- Exceptional water solubility of finished products.
- More stable products than petroleum derivatives provide.
- Most desirable surface tension characteristics.
- Smaller bubbles than similar compounds made from petroleum derivatives.

Adols in the C_{12} to C_{16} chain lengths neither volatilize nor have as much odor as the short chains do. They are softer and easier to use than the longer chain lengths, have excellent emollient features, and have optimum surface active characteristics.

ADM's Adols are particularly noted for their freedom from traces of hydrocarbons because of unique production methods.

When you want a reliable source . . . or when you need special help on surfactant problems . . . call on ADM for the most complete line of lauryl and myristyl alcohols available.



Macro-photo shows how ADM sulfonated lauryl alcohols affect surface tension. Surfactant made from Adol 14 has been added to water in beaker at right. Dramatic reduction in capillary rise shows why ADM lauryl alcohols are chosen for surfactants where maximum surface active characteristics are desired.

OTHER ADM PRODUCTS: Linseed, Soybean and Marine Oils, Paint Vehicles, Synthetic and Natural Resins, Vinyl Plasticizers; Fatty Acids and Alcohols, Hydrogenated Glycerides, Foundry Binders, Industrial Cereals, Vegetable Proteins, Wheat Flour, Dehydrated Alfalfa, Livestock; Poultry Feeds, Olefins and Hydrocarbons.

The Research Chemists' Corner

A glass ball and socket arrangement like the one shown here speeds vacuum distillation by making set-ups quick and easy. It gives an excellent stirring connection which in the ADM research laboratory has been used even at .05 mm Mercury vacuum. The ground glass seat fits better as it wears and the ball and socket type of bearing not only runs more freely than other types, but also has a "universal joint" type of flexibility which permits the motor to be slightly off center.

ADM researchers now assemble it from standard taper connections, and find it works with either a metal or glass stirrer. They use a dab of Admex 710 (an ADM plasticizer) to seal and lubricate the joint. Equipment can be set up in a jiffy —even without rubber connections by using glass-to-glass seal or special cement.

Further notes on Alpha Olefins

Even though alpha olefins have been around long enough to get into commercial production, many people still haven't had a chance to get acquainted with them. A few more words in their behalf seem fitting.

Areas in which alpha olefins stir up interest are so varied that these highly reactive chemicals almost sound like a cure-all remedy. They aren't. But they are startling new building blocks, both for chemical intermediates and as reactants to modify existing products.

Consider them if you are involved with viscosity index improvers, pour-point depressants, detergents, lead scavengers, leather treating, textile and paper chemicals, adhesives, plastics, polymers, or protective coatings . . . just to name a few.

Here's why: Straight-chain C_{12} to C_{16} olefins with the unsaturation between the 1 and 2 carbon atoms come from the dehydration of purified fatty alcohols of known composition and chain length. They attain final purities better than 90%. These slender, straight molecules have remarkable metal-wetting properties. They form completely different products than olefins with side chains previously available. They generally react smoothly because of their known structure. When reacted, their derivatives are more stable against oxidation than those of the branched chain (petroleum-derived) olefins. They resist break-down under shear.

There's much more you should know about alpha olefins. Write us. We can send literature, data sheets . . . perhaps even a sample to evaluate.

Archer-Daniels-Midland

CHEMICAL PRODUCTS DIVISION
707 Investors Building
Minneapolis 2, Minnesota

Chemifats from Nature's Wondrous Warehouse

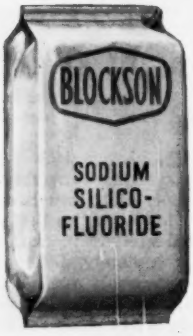
Blockson has the stand-by capacity to stand by its

SODIUM SILICO-FLUORIDE customers

with Blockson as your SSF supplier you can

PLAN AHEAD SAFELY

The largest Sodium Silicofluoride manufacturer, Blockson has stand-by capacity PLUS a plant expansion program that builds well ahead of its customers' increasing needs.



FOR DATA SHEET, TEST SAMPLE, PRICE OR CONTRACT PROPOSAL CALL BLOCKSON OR YOUR BLOCKSON DISTRIBUTOR

P.S. Include SSF with other Blockson chemicals in your mixed-car orders.

OLIN MATHIESON CHEMICAL CORPORATION
BLOCKSON

BLOCKSON CHEMICAL COMPANY
Division of Olin Mathieson Chemical Corporation
Joliet, Illinois

OPINION

$8-Million Savings

To THE EDITOR: Your excellent article on the 20/18-gauge steel drum controversy *(CW, June 28)* has been reviewed with great interest by members of the MCA Chemicals Packaging Committee. They feel that such reportorial digging into a rather complex subject contributes appreciably to a better understanding of one of the less-publicized problems facing the chemical industry.

It is possible, however, that your reference to potential savings of $45,000 to $65,000 annually might be construed to imply that these would be over-all industry savings. Actually, these figures represent what some individual companies alone (and the smaller users, at that) might realize by approval of the 20/18-gauge drums for multiple-trip service. Total savings to the industry conceivably could be as high as $8 million annually; therefore, you will appreciate that this is one of the reasons why our Chemical Packaging Committee has no intention of accepting the Classification Committee's recent decision as closing the matter.

C. H. MAYHOOD
Transportation & Packaging Engineer
Manufacturing Chemists' Assn., Inc.
Washington, D. C.

Wanted: Woodpecker Bane

To THE EDITOR: In your Dec. 3, '55 issue, you published an article about a project being conducted here at Penn State, prevention of woodpecker damage to wooden utility poles. Through that article, we were very fortunate to receive many offers of chemical repellents. The repellents were tested in an aviary, and finally four were given field tests.

We feel, however, that no chemical of the 70 chemicals tested to date is satisfactory or provides the best answer to our problem. We would be very appreciative if you could make your readers aware of the fact that we are still searching for a suitable woodpecker repellent.

Our original testing device, a captive woodpecker, has died of natural causes. But we are arranging to procure several more and should be ready to conduct preliminary aviary tests by early fall. . . .

JOHN F. SENFT
Instructor in Forestry
Pennsylvania State University
University Park, Pa.

Confidence in Texas

To THE EDITOR: I have . . . read the article *(June 21)* . . . titled "Water: Boon and Bane to N. E. Texas CPI."

As a resident of northeast Texas and as one who has been privileged to serve the First Congressional District of Texas for the past 30 years, I wish to express to you my appreciation . . .

We have great confidence in our section of the country. . . . We have an abundant supply of controlled mineral-free water, and within the next decade, we plan to have navigation from the Gulf of Mexico to Denison, by way of Shreveport and Texarkana. . . .

WRIGHT PATMAN
House of Representatives
Washington, D. C.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

MEETINGS

Gordon Research Conferences, series of 36 topics, Colby Junior College, New Hampton School and Kimball Union Academy, all in New Hampshire, ends Aug. 29.

Western Packaging and Materials Handling Exposition, Civic Auditorium, San Francisco, Aug. 11-13.

"Atoms for Peace," second international exhibition, Geneva, Switzerland, Sept. 1-14.

American Chemical Society, 134th national meeting, Chicago, Sept. 7-12.

DCAT, 68th annual meeting, Sagamore Hotel, Lake George, N.Y., Sept. 11-14.

American Rocket Society, fall meeting, Statler Hotel, Detroit, Sept. 14-18.

Here's news!

Baker CALCIUM NITRATE, Tech.
ZINC NITRATE, Tech.

in THIN FLAT FLAKES

- *Faster dissolving*
- *Uniform purity—lot after lot*
- *Controlled water of hydration*
- *Easier to handle*

Look over the photograph above, reproduced to actual size. Note the thin flakes with large surface area. THIN FLAKES go into solution FAST – you save time and money. They are easy to handle. These chemicals in *flake* form represent another Baker first.

Latex processors gain better control of coagulation because of the controlled high assay and known water of hydration. This uniform purity, controlled pH and freedom from extraneous matter insure better quality in your finished goods with fewer rejects.

These chemicals are produced to meet precise specifications. In the informative typical analysis shown below, note the very low ammonium nitrate content in Baker Calcium Nitrate. The exceptionally low copper and manganese contribute to longer life for your latex products, with less tendency to oxidize and become brittle or too soft.

These features of Baker Calcium Nitrate and Zinc Nitrate also are helpful to manufacturers of rustproofing specialties, textile finishes, pigments, adhesives and lithographic materials.

Because of the low melting points and deliquescent nature of these chemicals, they are packaged with polyethylene liners and are stored in an air conditioned warehouse at a temperature below 85°F.

Write for samples and prices for these new *flaked* products, Calcium and Zinc Nitrate Technical.

CALCIUM NITRATE, Technical Flake — *Typical analysis*

Assay (as $Ca(NO_3)_2$)	70.8 %
Water of Hydration	28.6 %
Insoluble and NH_4OH Ppt.	0.03 %
Ammonium Nitrate (NH_4NO_3)	0.1 %
Magnesium & Alkalies (as NO_3)	0.4 %
Iron (Fe)	0.0003%
Copper (Cu)	0.0004%
Manganese (Mn)	0.001 %
pH of 5% Solution	6.0

Thin (0.025 in.) flakes about ½ inch in size with the following typical mesh analysis:

On U.S. No. 4	45%
Thru U.S. No. 20	8%

ZINC NITRATE, Technical Flake — *Typical analysis*

Assay (as $Zn(NO_3)_2$)	74.2 %
Water of Hydration	25.6 %
Insoluble Matter	0.008 %
Iron (Fe)	0.001 %
Lead (Pb)	0.005 %
pH of 5% Solution	5.1

Thin (0.035 in.) flakes about ½ inch in size with the following typical mesh analysis:

On U.S. No. 4	26%
Thru U.S. No. 20	9%

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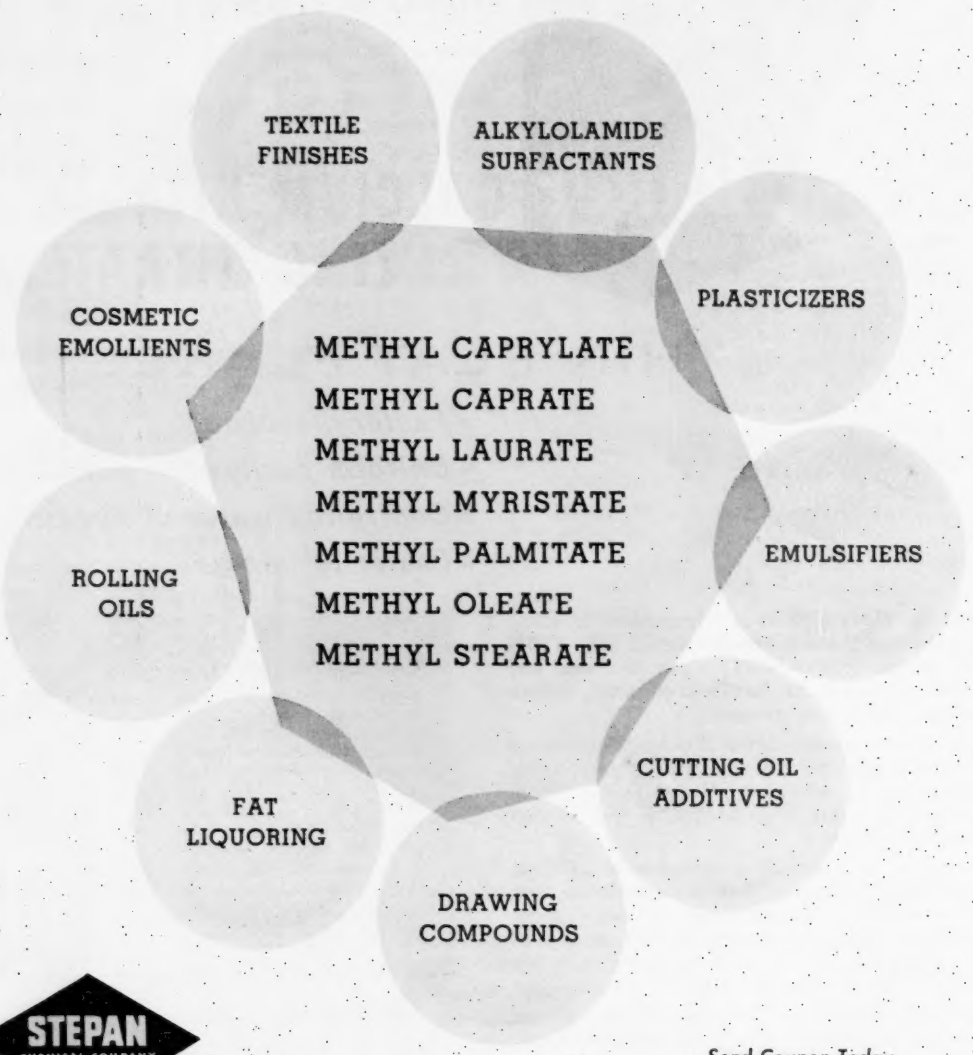

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VIEWPOINT

EVER SINCE we published a story *(May 17)* pointing up the intensified competition from co-ops in fertilizer manufacture, we have received many temperate, well-reasoned letters pointing out that co-ops are a part of our private-enterprise system, that they do pay taxes on undistributed profits, and—contrary to our earlier belief—that only certain rural electrification co-ops can borrow money at 2%.

Last week, we reported that a Mississippi co-op sold its excess ammonium nitrate to nonmembers at its $5/ton discount, and that corporate competitors had to meet the price. No matter how you try to rationalize it, every ton sold by any corporation at the lower price means $5 less profit before taxes to the corporation: the stuff's already made; the costs are already paid. The loss in income taxes to the federal government is $2.60.

Let's assume that the co-op leaders are perfectly right and that present laws governing co-ops are justifiable. Then aren't laws governing corporations inequitable?

It seems to us that a persuasive case can be made for abolishing corporate income taxes—on the simple grounds that corporations don't pay the taxes; the ultimate consumer does. The use of capital has a price—that price depends on various factors such as risk, yield, growth potential. The corporation sets a price on its product to cover the price of its capital, and taxes are simply a cost item.

As for the $2.40 balance of unmade profit—that's money that the corporation now doesn't have, can't add to its own capital, or can't utilize to pay for the use of outside capital. That's especially meaningful during a "capital-goods recession."

It's not that co-ops are the only culprit—or even an important one. But they highlight an inequality in our economic setup that calls for searching, brow-furrowing thought.

H. C. E. Johnson

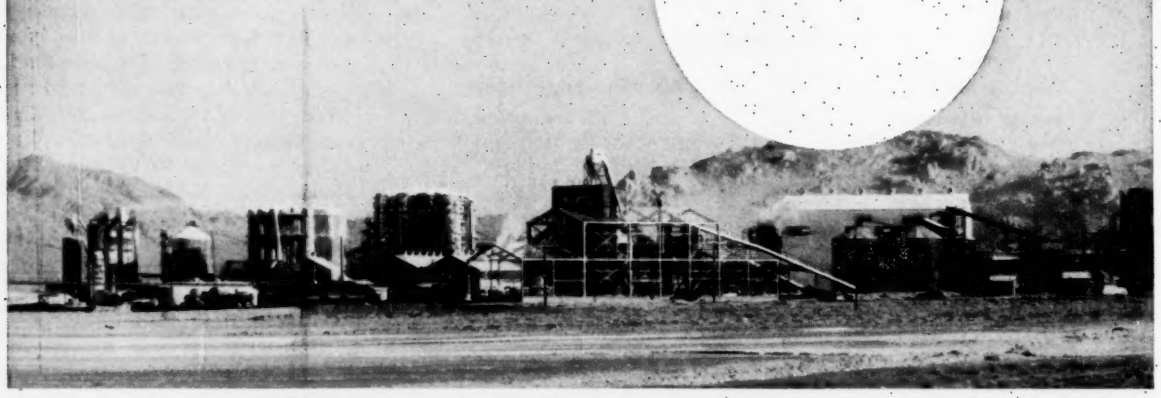
Editor-in-Chief

West End anhydrous **SODIUM SULFATE** merits your confidence for its consistent purity

Here is the new high standard of sodium sulfate quality achieved by exclusive West End production techniques and controls. The product is pure white and exceedingly low in heavy metal content. It is guaranteed 99½% minimum Na_2SO_4 yet actually runs 99.75% to 99.8% Na_2SO_4 typically. We invite your attention to the adjacent typical analysis and welcome your communication.

TYPICAL ANALYSIS

Na_2SO_4	99.5% or better
Na_2O	.05%
B_2O_3	.05%
NaCl	.07%
Insoluble	Trace
Loss on ignition	Less than 0.1%
Solution	Clear
Color	White
Fe	1 ppm
As	1½ ppm
Cu & Zn	Not detectable



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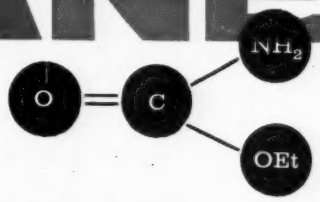

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- In the preparation and modification of amino resins.
- As a solvent and co-solvent in pesticides, fumigants, cosmetics, etc.

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Water (H^+) ⟶ $EtOH, CO_2, NH_2^+$

Water (OH^-) ⟶ $EtOH, CO_3^=, NH_3$

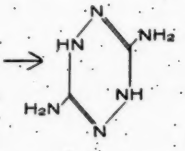
Alcohol ⟶ $ROCONH_2$

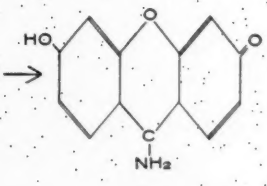
Halogen ⟶ $EtOCONHCl$ Ethyl N-Chlorocarbamate

Aldehyde (OH^-) ⟶ $EtOCONH_2CHOH$
Ethyl N-hydroxymethyl carbamate

Aldehyde (H^+) ⟶ $(EtOCONH)_2CH_2$
Diethyl N,N'-bis-methylenedicarbamate

Aldehyde (OH^-, H^+) ⟶ $EtOCONH(EtOCONCH_2)_nCH_2OH$
Carbamate polymer

Hydrazine ⟶ 

Resorcinol ⟶ 

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Technical Data Sheet No. 8: Alkyl and Aryl Carbamates

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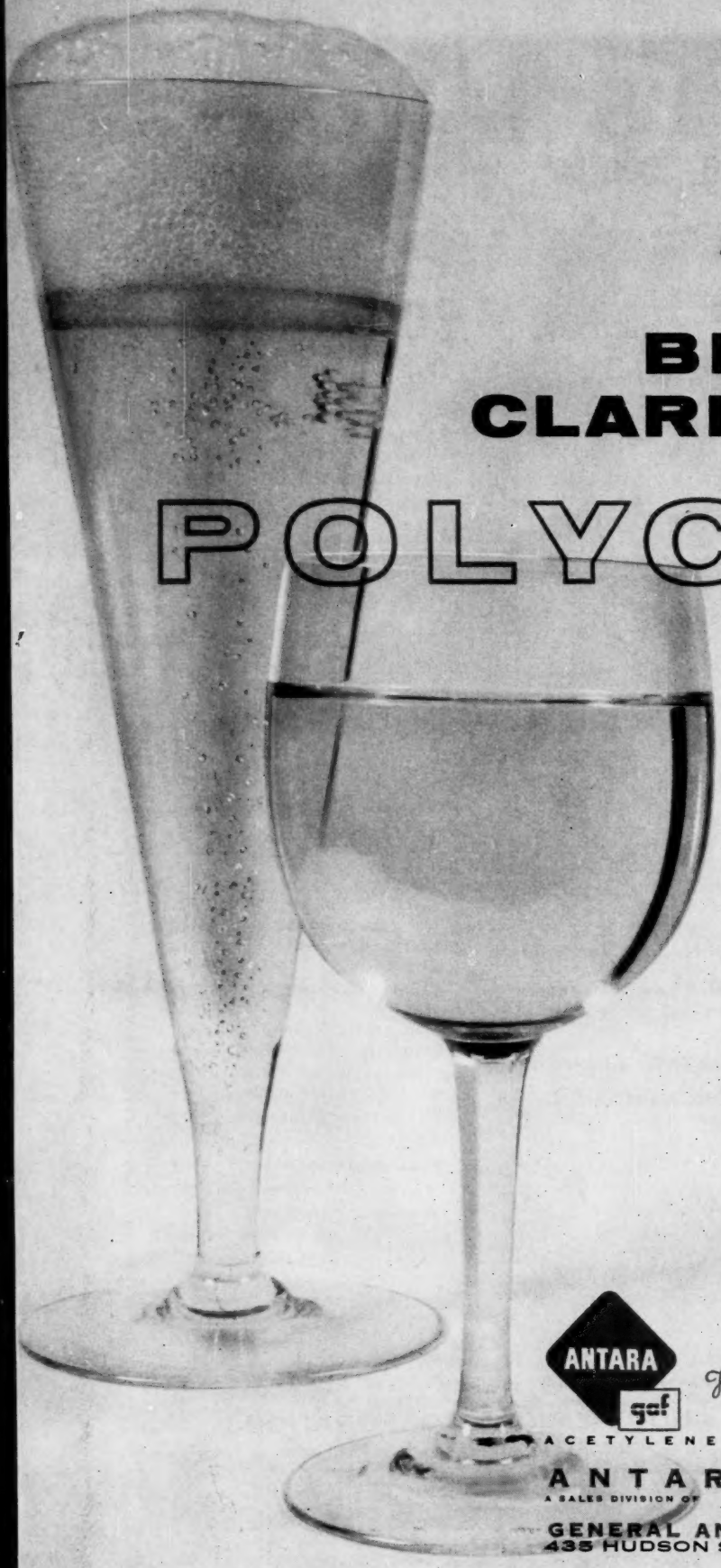

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Business Newsletter

CHEMICAL WEEK
August 2, 1958

Latest chemical company earnings reports generally bear out the second-quarter uptrend pinpointed this week in *CW's* sales-and-earnings table (*p. 22*).

Koppers reveals second-quarter sales of $66.8 million and after-tax income of $1.2 million. Though well under last year's mark, this amounts to a 17% sales boost and a 5% earnings increase over the first-quarter.

Texas Gulf Sulphur upped its sales to $14.2 million, compared with $12.1 million during the first three months. Second-quarter profits were virtually unchanged at $3.5 million.

Among the booming pharmaceutical firms, Carter Products' sales climbed to $11.6 million in the three months ended June 30, a 2.9% gain over '57's second quarter. Profits rose 2.5%, to $1.6 million.

Cutter Labs posted an all-time high, with sales for the first half of '58 hitting $9.9 million, compared with $9.2 million last year.

•

Richfield Oil Corp. is barreling ahead on two big projects.

Despite the recent pessimistic report on the recoverable reserves in the Athabasca oil sands in western Canada (*CW, July 12, p. 22*), Richfield is going ahead with its scheduled oil-recovery program there. The company says it's not disturbed at the Alberta Research Council's estimate; "our information indicates there's plenty of oil in Athabasca."

And Richfield is setting up a Petrochemical Dept. Official start-up date is Sept. 1, although Richfield put its $6.5-million plant into operation early in June. Capacity: 1,250 bbls./day of benzene, 1,500 bbls./day of toluene. Other products are to be added soon.

•

Carborundum Co. will proceed with a $10-million expansion project, in Niagara Falls, N.Y. Construction will start within 30 days on the first step, a $6-million grinding wheels plant. Facilities for other vitrified lines will follow. Carborundum decided to go ahead with this phase of its $48-million over-all expansion program when negotiations on a new labor contract with Local 15-12058 (OCAW-CIO) were satisfactorily concluded (*CW Business Newsletter, June 14*).

•

Petrochemicals are leading Europe's chemical boom, according to new figures from the Chemical Products Committee of the European Economic Cooperation. In terms of carbon content—a common denominator often used in Europe—petrochemical output in the 17 nations of West Europe (including Great Britain, Ireland, Greece, Turkey) rose 34% last year, to 630,000 tons. It is expected to hit 2 million tons by the end

of '60. Between '45 and '58, a total of $550 million was invested in petrochemicals; by '61, an estimated $1.2 billion will have been spent in this field. Synthetic rubber, polyethylene and ethylene oxide derivatives, solvents, and raw materials for plastics and detergents are slated for biggest boosts.

Plastics producers also enjoyed a record year in '57. Total sales of plastics rose 19%, to 1.4 million tons—almost 500% over the '50 level. Thermoplastics led, with sales jumping 24%, to 680,000 tons.

Dyestuffs producers reported a good year, too. Output last year rose 11%, to 124,000 tons, and prices held fairly steady after drifting downward several years. But lagging textile consumption may depress '58 sales.

•

Revlon Inc. products will be made in Israel by a new company, Marlon Products, Inc. It will build a $1.2-million cosmetics and pharmaceutical plant this year near Ascalon. The company will export about 80% of its output to 19 nations "in the Middle Eastern area" under exclusive rights from Revlon. Marlon is entirely independent of Revlon. Major (60%) stockholder is Mark D. Soroko, a U.S. Revlon vice-president. He, with another American and an Israeli businessman, will invest $500,000. The Israeli government will lend the balance.

The Arab League, incidentally, is continuing its boycott of all goods made in Israel and those of U.S. firms investing in Israeli enterprises.

•

Bullish prospects for textile chemical markets continue.

Rising dye and textile chemical sales prompted Du Pont to rehire more employees at its Chambers Works (Deepwater, N.J.) last week. This brings to 139 the total number of recalls since last spring's cut of 265.

Meanwhile, man-made fiber production is heading up. Last year, synthetic fibers made up 24% of total U.S. fiber consumption, a new U.S. Dept. of Agriculture study reveals. Cotton's share slipped to 24%, compared with an average of 81% in 1935-39.

Dow's Zefran is the latest entry into the U.S. synthetic fiber market. The James River (Williamsburg, Va.) plant is now in commercial production, although its full 12-million-lbs./year-capacity rate won't be reached for several months.

•

World synthetic fiber output hit a record 6.5 billion lbs. last year, the USDA study finds. And more capacity is on the way. In Buenos Aires, for example, Von Kohorn International (White Plains, N.Y.) will equip a new viscose staple plant for Sniafa S.A., major South American rayon producer.

New polyester resin grade diethylene glycol offers uniformity batch after batch

Now available is a new polyester resin grade of diethylene glycol. *This* CARBIDE *diglycol is produced specifically for the manufacture of polyesters and polyurethanes*:

Here are three outstanding advantages of this new polyester-resin grade chemical.

- Narrow boiling range which demonstrates product purity
- Controlled hydroxyl content assures uniform performance in processing
- Low ethylene glycol content to give polyesters with more uniform viscosity and excellent handling properties.

These stringent specifications help you obtain uniform batches—time after time.

Remember, whether you make a saturated or unsaturated polyester resin, there's a wide selection of CARBIDE glycols and triols to choose from. These include—Ethylene glycol, Diethylene glycol, Triethylene glycol, Propylene glycol, Dipropylene glycol, 1,2,6-Hexanetriol and 1,5-Pentanediol.

For information on these glycols—or samples—call the nearest CARBIDE Technical Representative or write Department H, Union Carbide Chemicals Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, New York. In Canada: Carbide Chemicals Company, Division of Union Carbide Canada Limited, Montreal.

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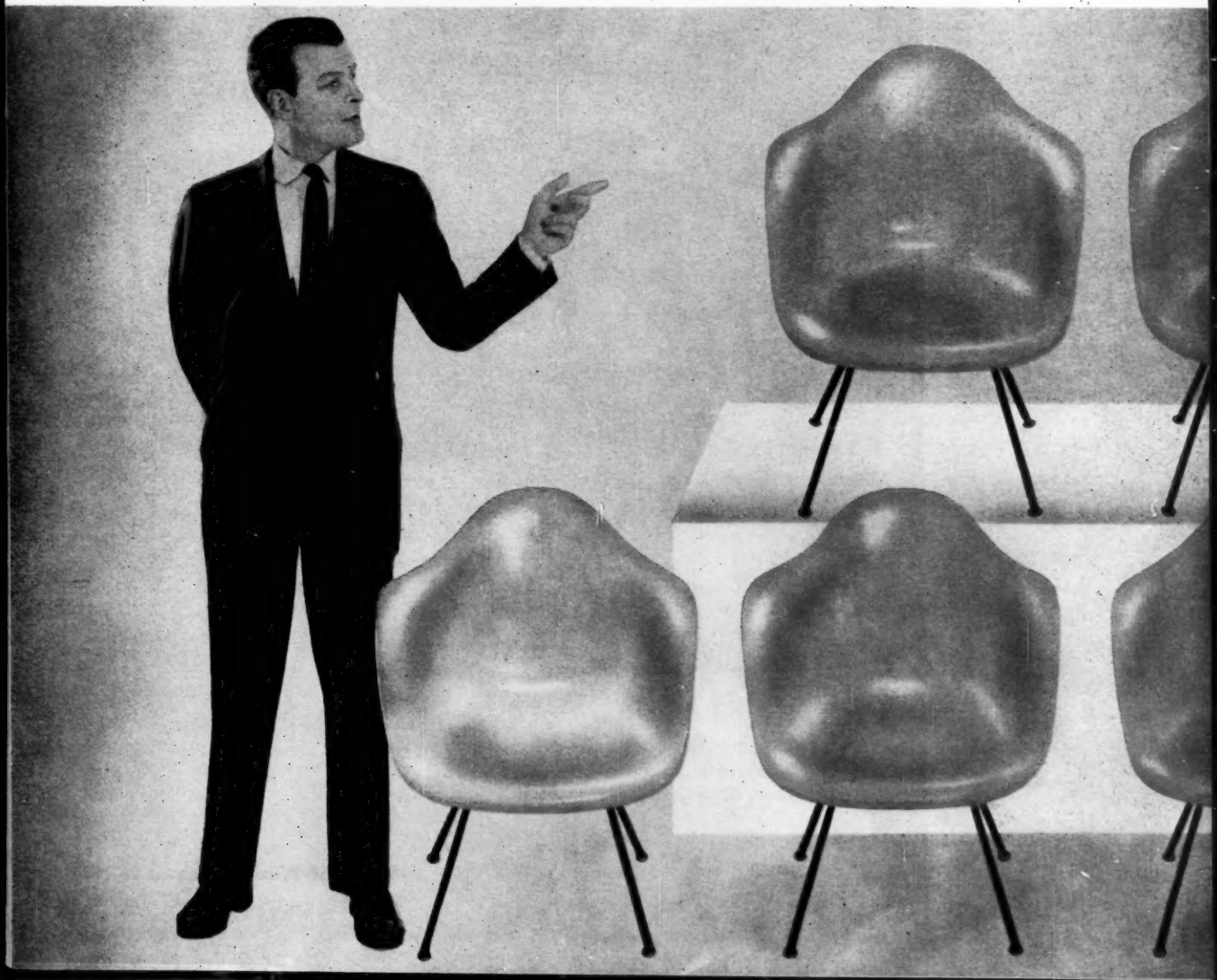

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	SALES 2nd-qtr. '58 (millions)	Change from 1st-qtr. '58	EARNINGS 2nd-qtr. '58 (millions)	Change from 1st-qtr. '58	SALES 1st-half '58 (millions)	Change from 1st-half '57
Air Reduction	$42.4	down 2.1%	$3.2	down 5.5%	$85.6	down 8.0%
Allied Chemical	166.4	up 11.8%	8.0[1]	up 17.6%	315.3	down 9.8%
American Cyanamid	124.8	down 5.8%	6.8	down 44.8%	257.4	down 0.7%
American Potash	12.2	up 5.7%	1.1	up 3.7%	23.7	up 8.7%
Atlas Powder	16.6	up 9.2%	0.7	up 35.4%	31.8	down 9.6%
Catalin	5.1	up 4.1%	0.1	up 50.0%	10.0	down 18.3%
Diamond Alkali	29.5	up 9.8%	1.5	up 79.7%	56.4	down 9.6%
Du Pont[2]	438	up 5.5%	45.5	up 6.6%	853	down 14.4%
Foote Mineral	6.0	up 4.6%	0.5	up 8.9%	11.7	down 10.1%
Freeport Sulphur	N.R.	——	3.0	up 1.2%	N.R.	——
General Aniline	35.6	up 10.9%	1.0	up 15.1%	67.7	down 0.3%
Hercules Powder	60.0	up 5.6%	4.4	up 33.1%	116.8	down 6.4%
Hooker[3]	31.2	up 7.6%	2.6	up 3.2%	60.2	down 4.8%
Lilly, Eli	42.5	down 5.8%	5.3	down 16.6%	87.7	down 12.8%
Mallinckrodt	7.9	down 6.8%	0.2	down 15.0%	16.4	up 2.1%
Merck	51.3	up 2.2%	7.5	up 13.5%	101.5	up 11.2%
Monsanto[4]	137.6	up 7.9%	6.9	up 14.3%	265.0	down 10.8%
National Distillers[5]	124.1	up 8.5%	4.5	down 18.4%	238.4	down 10.0%
Pennsalt	20.0[6]	up 8.1%	1.0[6]	up 50.0%	38.5[6]	down 5.6%
Pfizer	53.1	down 1.3%	5.1	down 21.5%	106.9	up 8.6%
Rayonier	26.4	up 3.4%	0.7	up 45.9%	52.0	down 13.3%
Reichhold	18.7	up 17.7%	0.9	up 116.7%	34.5	up 4.4%
Rohm & Haas	44.3	up 13.0%	3.4	up 21.4%	83.5	down 8.1%
Stauffer[6,7]	42.1	up 11.9%	4.2	up 53.1%	79.6	up 0.4%
Stepan[8]	3.2	down 18.8%	0.2	down 20.7%	7.1	down 10.4%
Union Carbide	294.8	up 0.3%	27.1	up 18.6%	588.9	down 14.7%
Victor	13.1	up 0.7%	0.8	down 13.2%	26.2	down 3.5%
Wyandotte	18.3	up 8.9%	0.3	up 250.0%	35.1	down 12.7%

(1) Excluding $543,512 profit on sale of securities.
(2) Net income excluding General Motors dividends, as estimated by CW.
(3) Including operating results for Shea Chemical, merged May 29, '58.
(4) Operating results for parent company, domestic and Canadian subsidiaries.
(5) 1957 figures restated to include operating results of National Petro-Chemicals, merged Dec. '57.
(6) CW estimate.

Rising Sales and Profits Brighten

For most chemical companies, both sales and earnings now are tilting upward from last winter's low-water marks.

Firm upward trends are apparent in most of the second-quarter financial statements issued as of early this week *(table, above)*. The turning of the tide was presaged last week in returns from early-reporting companies *(CW, July 26, p. 27)*.

Despite the pickup, industry executives are still wrestling with the double-edged problem of lower sales revenues and higher operating costs, relative to 1956. Taking some of the sparkle off the second-quarter uplift are these factors:

- Seasonal gains—particularly true of companies with a heavy interest in agricultural chemicals. For these firms, at least part of the winter-to-spring sales increase is due to a sales lift encountered nearly every year.
- Comparison with last year. In the great majority of cases, sales and profits—for both the second quarter and first half of this year—are decidedly lower than in '57.

Only a few chemical process firms

EARNINGS 1st-half '58 (millions)	Change from 1st-half '57	Earnings-to-sales ratio, 1st-half '58	Earnings-to-sales ratio, 1st-half '57
$6.6	down 20.2%	7.7%	8.8%
14.8[1]	down 33.0%	4.9%	6.3%
19.2	down 17.4%	7.5%	9.0%
2.2	down 11.6%	9.3%	11.4%
1.3	down 35.0%	4.0%	5.7%
0.1	down 57.0%	1.0%	1.9%
2.4	down 49.0%	4.2%	7.5%
88.2	down 36.5%	10.3%	14.0%
1.0	down 14.0%	8.9%	9.3%
5.9	down 10.8%	—	—
1.8	down 18.5%	2.7%	3.3%
7.7	down 12.0%	6.6%	7.0%
5.1	down 6.2%	8.5%	8.7%
11.7	down 33.9%	13.3%	17.6%
0.4	down 15.9%	2.2%	2.7%
14.0	up 19.6%	13.8%	12.9%
13.0	down 41.4%	4.9%	7.5%
10.0	down 14.3%	4.2%	4.4%
1.8[6]	down 8.2%	4.7%	4.8%
11.6	up 15.2%	10.8%	10.2%
1.2	down 69.8%	2.3%	6.5%
1.3	down 11.5%	3.8%	4.5%
6.3	down 24.4%	7.5%	9.1%
6.9	down 2.9%	8.7%	9.0%
0.4	down 18.9%	6.2%	6.8%
49.9	down 28.3%	8.5%	10.1%
1.7	down 15.8%	6.5%	7.4%
0.5	down 79.2%	1.3%	5.5%

7) Including operating results for Anderson Chemical, acquired May 15, '58.

8) Including operating results for Ninol Laboratories, acquired Aug. '57.

'58 Outlook

improved their earnings ratios.

The three largest chemical companies all participated in the rising trend. Du Pont's operating income climbed from 87¢/share in the first quarter to 94¢ in the second; Carbide credited operating economies and gradually growing sales volume for its 18% profit gain; Allied reports better sales for nearly all products.

MCA Hits Label Bill

Spokesmen for the Manufacturing Chemists Assn. demanded last week that labeling laws be written so that they can be obeyed and so that producers and repackagers of chemical products can be reasonably certain that they are obeying them.

The demand was made by Thomas Nale of Union Carbide and Sanford Hill of Du Pont, testifying in Chicago for MCA before the American Medical Assn.'s Committee on Toxicology. Their target: AMA's "Model Uniform Hazardous Substances Act," which provides for regulation of distribution and sale of hazardous substances for household, commercial and industrial use.

"Self-policing," the MCA spokesmen asserted, ". . . must be the mainstay of . . . any act covering household products . . . Substantially all products packaged in containers will come within the broad definition of hazardous substances." They pointed out that the testing necessary to determine all qualities of every product would "more than tax the scientific resources of this country—if not of the world." Nonetheless, "the manufacturer and the repackager must and can determine whether their products will cause substantial injury and are hazardous substances."

The MCA speakers criticized sections in the AMA bill that would require "Warning" or "Caution" labels only on substances that fall within a certain limit of toxicity. Many other chemicals should be labeled with these warnings, they asserted. "Toxicity is only one element of the hazard, and it is wrong to base a label law on toxicity alone."

Another criticism concerned the bill's scope. The bill covers not only household chemicals, but products for commercial and industrial use as well.

Industrial chemicals are already properly labeled, the speakers asserted. If further regulation is enacted MCA believes, it should be administered by a separate agency.

Dramatizing the need for uniform labeling regulations was the recent Florida Supreme Court finding against Tampa Drug Co. in a product liability case based on labeling of a cleaning compound containing carbon tetrachloride. The court upheld a jury award of $160,000 to the plaintiff, whose husband died 12 days after he had used the compound. The widow charged that the label was "inadequate to warn the user."

Solid Fuels Soar

Chemical companies betting on the future of solid fuels for rockets got a big shot of encouragement this week. To three chemical firms, the Air Force awarded contracts to develop solid-fuel rockets for its new three-stage Minuteman intercontinental ballistic missile.

Thiokol Chemical Corp., a pioneer in solid fuels, will develop the first-stage engine for the Minuteman, which succeeds the two liquid-propellent ICBMs still under development. Aerojet-General Corp. will provide a "limited backup" for this program, will also develop the second and third stages. Thiokol, in turn, is to work on a "parallel program stressing a different engine casing" for the second stage and a "backup" project for the third, "contingent upon verification of fuel properties."

Hercules Powder Co. also won a contract for the third stage for a "limited program" to "thoroughly explore the potential" of its double-based (homogeneous) propellents, which have been termed a possible "dark horse" in the solid-fuels roster (*CW, May 17, p. 28*).

Although classified as an intercontinental missile, Minuteman will be a multipurpose missile. Range will vary from 750 to 5,000 miles, depending on its number of engines.

Just how large the production orders will be for the second- and third-stage engines depends on the extent of Minuteman's role in the intermediate-range class. And this hinges largely on whether the Air Force will modify the Navy's solid-propellent Polaris IRBM into a land-based missile. It's the largest solid-fueled ballistic missile designed so far. The Air Force now has Pentagon orders to consider the use of the Polaris as a second-generation, land-based IRBM.

Indian government fertilizer plant—first of four, if money holds out—boosts capacity to 1,600 tons/day.

Cash Woes Hinder Growth of India's CPI

For U.S. chemical men weighing investment prospects in India, the past few weeks have brought both ill omens and encouragement. Along with threats of economic collapse have come steady reports of new chemical ventures getting under way, and new government incentives to spur them on.

Latest encouraging note was sounded last week, when India got a $25-million World Bank loan to aid power development in the industrialized Damodar Valley, part of its five-year industrial plan.

But most recent headlines about India are less cheerful. Last week, for example, an Indian representative officially informed the U.S. government of the well-known fact that his country is some $300 million short of desperately needed foreign exchange, just to meet this year's import bills. It will need $600 million over the next 12 months; $1.2 billion during the next three years.

Reserves Running Low: India's foreign exchange reserves — mostly sterling—are down to about $430 million and are running out at the rate of $10 million/week, due in part to low export prices, even more to huge imports of capital goods and raw materials.

Last year, India tried to stop this drain by setting import bans. These didn't turn the trick, so New Delhi will probably clamp down harder this year. If so, all but the most essential industries will feel a definite pinch.

Indian chemical process industries remain dependent on imported raw materials. One pharmaceutical firm tells *CW* that 90% of its materials are imported. Another company pegs imports at 50-60%. And dyestuff and plastics manufacturers say they ship in 80% of their materials. Any new cutbacks would, of course, affect these companies, would also probably hurt producers of fertilizers and nonferrous metals.

Development Gears Stripped: Ironically, the 1956-61 industrial development plan, supposedly the answer to India's raw materials and foreign exchange shortage, has, itself, all but succumbed to a lack of currency. Budget of the plan, designed to build self-sufficiency and bolster exports, has been reduced by at least $600 million from the original $10 billion figure. And unless the U.S. Congress comes to the rescue with a major appropriation (a remote possibility in an election year), the five-year plan will pretty much collapse. With it would die the plans for the vital basic expansion of India's CPI.

But some good news can be found for investors in India's chemical industry. In his 1958-59 budget, Prime Minister Nehru has given foreigners a small break on taxes, which are enormous—they help squeeze after-tax earnings to 3% in the chemical industry. Foreign wealth is now exempt from the "wealth tax"; and foreign management and technical personnel—after many complaints—now get their leave allowance tax-free.

Moreover, excess dividend taxes for private, limited companies have been trimmed by one-third. These tax concessions are small relief, but they reflect New Delhi's appreciation of the need for private industry. Despite India's socialist framework, nationalization isn't feared by businessmen.

Government Aids Industry: The government is, in fact, helping to finance private chemical companies with foreign interests. Atul Products Ltd., in which American Cyanamid holds a 10% interest, has drawn $1.2 million from India's treasury this year against a mortgage. And National Carbon, Union Carbide subsidiary, raised $2.1 million on a state-underwritten debenture issue to finance a 1,600-ton/year polyethylene molding powder plant, slated to go onstream this year. This and the Sindri fertilizer plant expansion (*photo, above*) are only part of India's complex of chemical plants now in or coming in. Hyderabad Construction Co., for example, will build the country's first acetic acid plant. The Birla Brothers will build India's first heavy-soda-ash plant next year. New sodium hydrosulfite, vinyl, calcium carbide, caustic, and pharmaceutical plants are also on the way, despite India's grim economic prospects.

COMPANIES

Mead Corp. (Dayton, O.) has purchased "a substantial interest" in Lamex, Inc. (Norcross, Ga.), is the third major paper firm to enter the business of polyethylene-coated wrapping and packaging (*CW Business Newsletter, May 31*). Lamex supplies polyethylene products to the textile, agricultural, food and paper industries.

This was Mead's third acquisition within a month and its sixth so far this year. Late in June, it bought total assets of Grand Rapids Container Co. (Grand Rapids, Mich.); early in July, it purchased the remaining stock of Miller Container Corp. (Louisville, Ky.).

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Aluminum Co. of America (Pittsburgh) has sold its recently closed plant at Buffalo, N.Y., to a group of Chicago and Cleveland businessmen. The sale included virtually all the equipment as well as the land and buildings. Alcoa will continue to use the sales office building on a lease-back arrangement.

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Tennessee Products & Chemical Corp. (Nashville, Tenn.) has moved into its new, three-story office building at 2611 West End Ave., Nashville.

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Dayton Rubber Co. (Dayton, O.) is forming a Molded Products Sales Division with a plant at Three Rivers, Mich., to produce molded rubber products. Company President Clowes Christie says future plans call for development of new elastomers and research and development in the vibration control field.

•

Sterling Drug Inc. (New York) is changing the name of its National Brands Division—marketer of the firm's line of nationally advertised medicinals, toiletries and household products—to Glenbrook Laboratories.

EXPANSION

Oxygen: National Cylinder Gas Division of Chemetron Corp. (Chicago) has broken ground for a new oxygen plant on leased premises of Erie Forge and Steel Co. (Erie, Pa.). The plant—expected onstream in Jan. '59—will pipe oxygen to Erie's steelmaking plant. Initial capacity, 7.5 million cu. ft./month, could be doubled quickly, the company says.

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Surface-Active Chemicals: Hodag Chemical Corp. (Chicago) is building a new plant and laboratory and office facilities. The expansion program will permit increased production of antifoams, esters, emulsifiers, flocculating agents and other surface-active chemicals; it will also permit the firm to add silicone antifoams and other silicone products to its line.

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Cement: Columbia-Southern Chemical Corp. (Pittsburgh) has launched construction of a multimillion-dollar, 1.5-million-bbls./year cement plant at Barberton, O., where the company has a deep limestone mine and extensive chemical operations. The plant—to be completed by Dec. '59—will include a 450x13-ft. rotary kiln and nine cement storage silos; it will comply with all air pollution codes.

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Process Equipment: Graver Water Conditioning Co. (New York) has set up a new foreign operations department to supply equipment for chemical processing and water and waste treatment in Latin America.

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Fertilizer: Southern States Cooperative (Louisville, Ky.) plans to build its first granular fertilizer plant near Russellville, Ky. The $750,000, 60,000-tons/year plant is expected to be onstream next spring.

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Petroleum Products: Pacific Supply Cooperative (Walla Walla, Wash.) has received bids on initial site work for its proposed 100-employee oil refinery near Vancouver, Wash. The Fluor Corp. (Los Angeles) is preparing plans and will supervise construction.

FOREIGN

Butane/Germany: BP Benzin- und Petroleum GmbH. (Hamburg) has put onstream at its Hamburg refinery a unit to produce 230,000 tons/year of light gases. Principal products: 25,000 tons/year of 99% butane. Others: propane, isobutane and light petroleum.

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Chemicals/Czechoslovakia: A 150% increase in production of chemicals is a major goal in Czechoslovakia's 1958-65 industrial program. Expansion of the mining and machinery industries will also be emphasized. Synthetic fibers goal: 95,000 tons/year.

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Nuclear Materials/Portugal: Britain and Portugal have signed an agreement on cooperation in peaceful uses of atomic energy. The pact provides for exchange of technical information and for the sale of British reactors and nuclear fuel to Portugal.

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Antibiotics/Argentina: Pfizer (New York) subsidiary Pfizer Argentina S.A. has started building a $14-million pharmaceutical plant on a 136-acre site at Moreno in Buenos Aires province. Principal equipment and material items are being imported from the U.S. The plant will be staffed by five U.S. technicians and 400 other employees. Some units will be onstream in '59, the others in '60. Products: 12 antibiotics and other pharmaceutical specialties, animal feed supplements and veterinary products.

•

Corn By-products/Colombia: Maizena, S.A., is building a corn processing plant at Cali to make liquid glucose and dextrin. Colombia's liquid glucose needs are now met by imports.

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G58-6

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HERCULES

Washington Newsletter

CHEMICAL WEEK
August 2, 1958

Tighter "antidumping" legislation will be decided at a joint Senate-House conference committee meeting this week to iron out differences between Senate and House versions of a technical amendment bill to the 1921 antidumping law.

Backed by the Administration, the House bill gives the Secretary of the Treasury broader leeway in comparing foreign and domestic prices when a competing domestic producer files petition for higher antidumping duties on an imported product. Under the bill, he also gets a wider latitude in comparing competing classes of foreign and domestic goods.

The Senate bill goes further. It would require the Tariff Commission—which must find injury to domestic producers before the higher duties can be levied—to find injury if its six members split three-three on the question, or take no action at all within the legal time period.

Chances are that the Senate version will be stricken from the final bill. There is also an outside chance that the conferees may fail to reach agreement and thus kill the bill altogether. Ironically, the two domestic producers that now have antidumping law protection would get lower dumping duties under the new law. And the rayon staple fiber industry, which has been pushing for the tighter changes, recently lost its case before Treasury when that department found imports are not coming in at less than "fair value."

Import protection under the antidumping law will be increasingly sought by domestic producers, regardless of what happens to the technical amendment bill. So will protection under the strengthened defense-essentiality provision of the Reciprocal Trade Agreements Act extension bill, which also goes to joint Senate-House conference this week. Aside from the defense-essentiality language, the conference committee is expected to settle for a trade bill close to the liberal measure that has been requested by the Administration.

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Business will likely get some break on depreciation from this Congress. The House has passed a bill that allows faster depreciation, for tax purposes, of new or used operating machinery and equipment. It would grant a first-year flat write-off of 20% of the first $10,000 of such capital goods—or $20,000, if the return is filed jointly by a husband and wife—provided that the acquisitions were made after Dec. 31, 1957. On the remaining 80% of the first $10,000 of cost and the excess above $10,000, regular depreciation rates would apply.

The depreciation benefit is in a small-business tax revision bill that also would extend to three years the time a company can carry back a loss for application against previous income. This, of course, is for the purpose of obtaining retroactive tax benefits. The present time limit for carrybacks is two years.

Washington

Newsletter

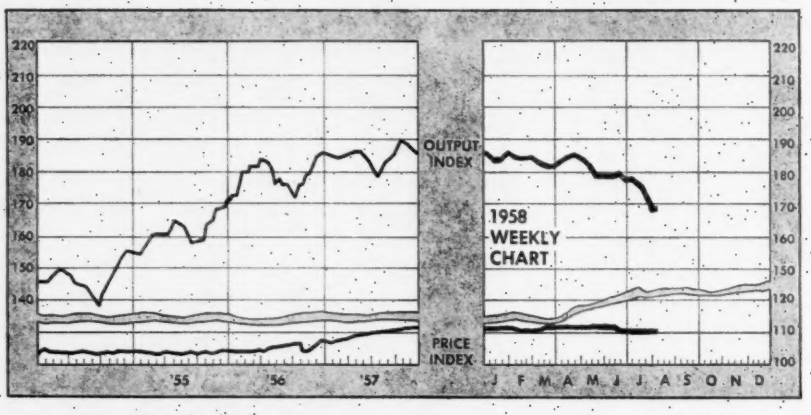
(Continued)

Chemical additive law is a near certainty this year. The House Commerce Committee reported a compromise bill on Monday that won immediate support from chemical and food makers and the Food & Drug Administration. Prospects are that the House will vote the bill in the next two weeks. The Senate is expected to give its okay before adjournment.

Under the bill, manufacturers must test new additives for safety before putting them on the market. FDA must set "reasonable" tolerances for most toxic additives—and will have a year to draw up an exempt list of existing food chemicals. Additives used before Jan. 1, '58 are exempt from testing—if "generally recognized among experts" as safe because of their wide or prolonged use in foods. Industry lost its fight for district court trials when FDA bars a new additive—but won a new safeguard: rulings must be based on a "fair evaluation of the entire record."

FDA gave ground in seeking the right to bar additives it doesn't feel are useful. The bill bars use of chemicals that might deceive consumers. It gives FDA power to block sale of additives that don't live up to manufacturers' performance claims. The committee dropped FDA's plan for appeals on disputes to National Research Council experts (but FDA can consult outside experts, anyway).

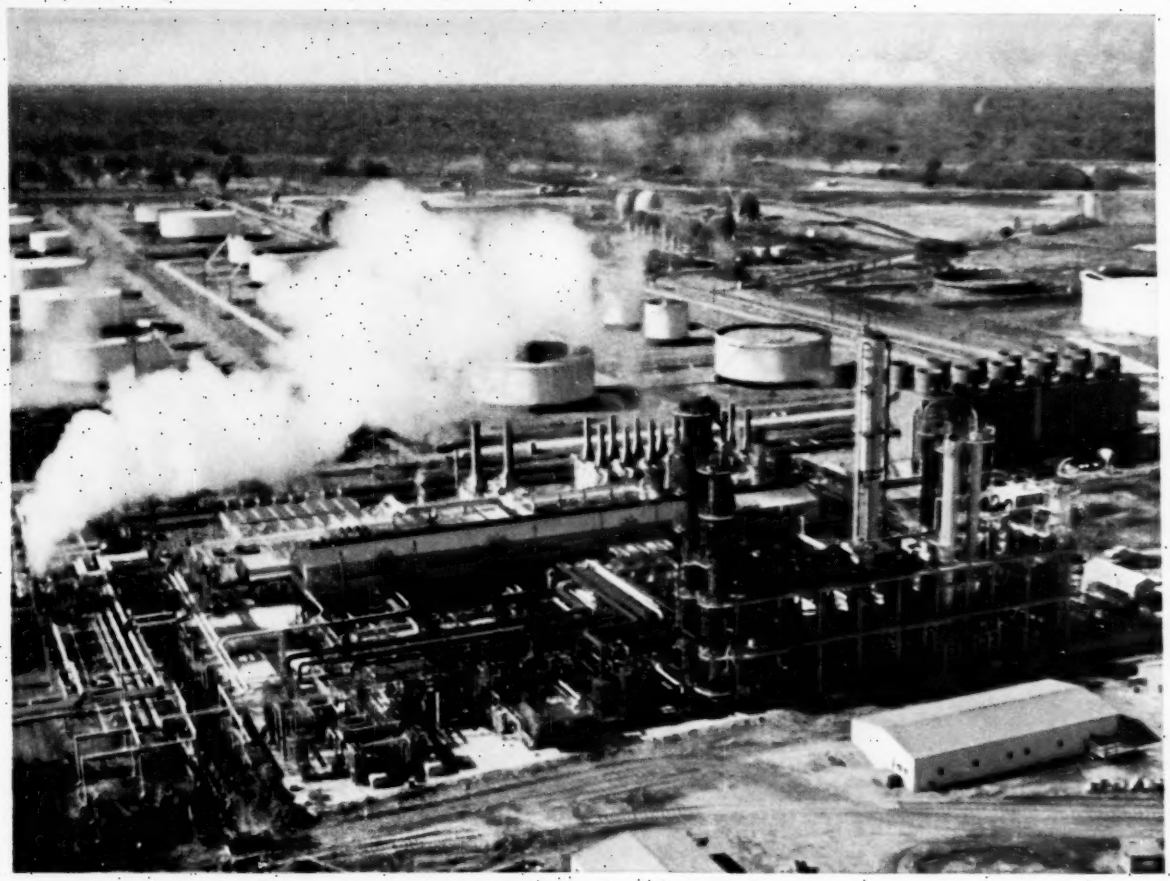
Food—not chemical—additives is how Congress designates the host of flavors, stabilizers, etc., made by chemical firms. That's a public relations victory for chemical and food men.



Business Indicators

WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	169.5	169.0	179.0
Chemical Week wholesale price index (1947=100)	110.7	110.6	110.5
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	43.02	40.73	46.82

MONTHLY Production (Index 1947-49=100)	Latest Month	Preceding Month	Year Ago
All manufacturing and mining	130	127	145
All chemical products	173	177	179
Industrial chemicals	177	182	200



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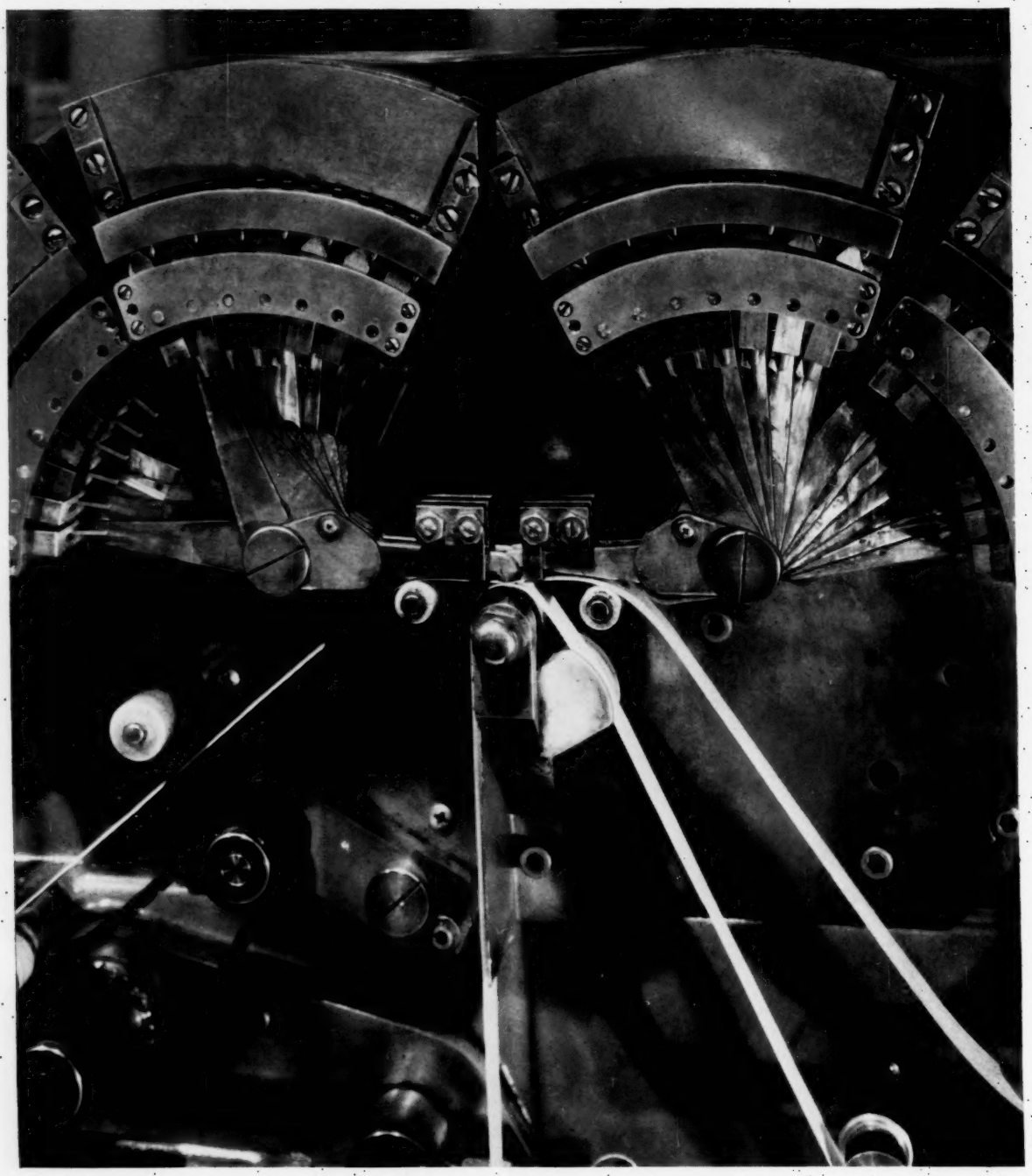

See the 28 vibrators poised over the paper tape? Each time a vibrator hits the paper it makes a black dot. The black dots form letters and numerals. The letters and numerals spell out names and addresses at 10 per second. Eastman Kodak Company developed and built this punch-card-obeying machine. Recently, an hour or so of its time was used to address a copy of **Eastman Organic Chemicals List No. 41** to everybody who has ever written us of a continuing need for an up-to-date compendium of research compounds, analytical reagents, indicators, and solvents for the laboratory. There are some 3700 compounds in all—with their package sizes, prices, structural formulas, BP's or MP's, and a few useful tabulations. Predecessors to List No. 41 are obsolete. If by the time you read this, you have not yet received your copy, you must assume that the impulses representing YOU never motivated the styli. If you want the catalog anyway and will accept an ordinary typewritten address, please inform *Distillation Products Industries*, Rochester 3, N. Y. (Division of Eastman Kodak Company).

DPi

CW PHOTO—LIONEL CRAWFORD

Auto laundries have turned into a multimillion-dollar market for special detergents and polishes.

Clean Cars Put Gleam in Chemical Sales

Last week, some 5.5 million autos were hauled through the nation's 4,000 "car laundries," and scrubbed with 1.2 million lbs. of various cleaning compounds. In short, auto laundering has become a big business in the U.S.

And, closely watched by suppliers of car care specialties, it's a business that has grown in a hurry; in 1945 there were only about 50 automatic car laundries in the U.S. (with a yearly throughput of some 3 million cars). In '48, there were 300; in '54, 1,600; in '55, 2,000. This year, some 4,000 units or "racks" are washing 288 million cars yearly. Of these, some 400 are in California and 300 are in Michigan (Detroit is the car wash center of the U.S.). About 72,000 car washes is the average annual operation.

Most of these car laundries are individually owned. Because of high cost of setting up an auto laundry (about $50,000 in temperate locales; $100,000 in cooler climes), there are relatively few chain operations. Philadelphia Minute Man Corp., a chain of about 12 racks, is the biggest. Most of the other chains have two, three or four units.

Brightening these autos adds up to a surprisingly large amount of chemical specialties business.

The laundries use 30-36 million lbs./year of steam cleaners and about 30 million lbs. of detergents. To remove grease and tar requires some 1.4 million gal. of kerosene; and to remove accumulated bugs, 1 million lbs. of bicarbonate are used. Some 600,000 lbs. of wax are required for 2.4 million cars (figuring 4 oz. of wax per car). Most of it is Simoniz; a small amount of other tradenamed products—silicon-treated waxes and dual-purpose cleaners—are used. Two million synthetic sponges are used plus large quantities of chrome cleaners, abrasive precleaners (needed for pretreating badly soiled cars before waxing), rust removers, rubber dressings (mostly in the South). Moreover, hefty amounts of detergents are needed to launder the 5.5 million turkish towels used by car washers.

These are rough estimates because of the wide variance in kinds of automatic equipment and material used. Robin King, editor of *Auto Laundry News*, tells *CW* that an auto laundry handling about 6,000 cars/month would require about 350 lbs./month of steam cleaning compound. It would also use around 30 gal. of liquid shampoo or 350-450 lbs. of powdered detergent. On the other hand, Mrs. Kathryn Conard, sales manager of the home office division of Chem-Therm (Monrovia, Calif.), reports that a 6,000-cars/month operation would use 700-750 lbs. of steam cleaning material along with 30 gal. of liquid soap or 250 lbs. of powdered

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detergent. Mercury Car Wash, one of the West Coast's big operators, estimates its detergent need at about a half-cup per car—it would use 600 lbs. for 6,000 cars.

Two Major Cleaners: The two items of greatest interest to specialties makers are probably (1) steam cleaners, i.e., alkaline compounds for use in cleaning bumpers, wheels and grills; (2) the neutral-based detergents for washing car bodies.

The steam cleaners are usually made with alkalis such as trisodium phosphate, tripolyphosphate, sodium tetraphosphate and caustic soda. Used at the rate of about ⅛ lb./car, these materials sell at 14-18¢/lb., represent something like $5-6.5 million worth of business.

The detergents, in liquid, paste or granular form, sell at 10-50¢/lb., amount to a $4-6-million business. Most of these detergents are based on alkyl aryl sulfonate (it's cheapest), usually contain about 40% active ingredient, some dirt-suspending agent. Few of the detergents contain builders; those that do use tri- or other polyphosphate. Some have three different surfactants. Those most often used, besides the alkyl aryl sulfonates, are fatty alcohol sulfonates, nonionics of oxylate nonyl phenol, sulfated nonionics and lauryl sulfate.

Most of the powdered detergents sold to car laundries are purchased from local distributors in 55-gal. drums or in 50- or 100-lb. bags. The liquids are usually sold in 30-gal. kegs.

The small local detergent dealer has been able to compete successfully in this highly competitive business because the low profit margins have tended to discourage vigorous merchandising by the big national outfits. In addition, transportation and shipping costs help keep the business on a local service basis by also discouraging national distribution. The low profit margin has led some formulators to cut costs by using cheap fillers and by eliminating softeners and conditioners.

Although distributors are not attracted by the limited profit margins, some small companies have still managed to market their products on a national scale. Chem-Therm, which also manufactures auto laundry equipment, sells locally through its own salesmen and nationally through what it calls "exclusive distributors." Advanco Labs (Saginaw, Mich.) has tried a similar system but reportedly without much success.

Dip: Recession has hit the car wash business, too. Some operators report business down $1,000/month or more. There are fewer new cars to wash; and many customers now have cars washed monthly instead of weekly.

A manufacturer of washing equipment has made a market study that discloses that "only 10% of the 4,000 mechanized car wash plants are making any money, that 50-60% are just getting by, that the rest are in a constant state of turnover."

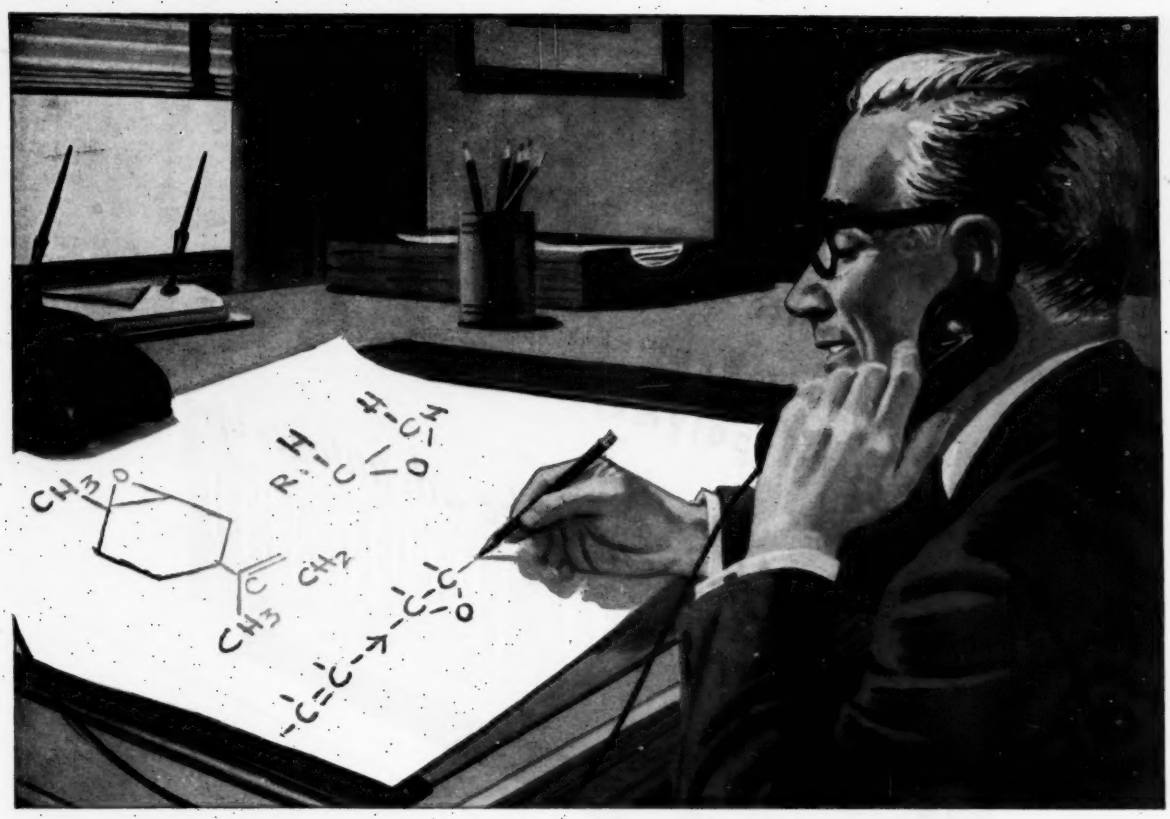
But equipment makers, in general, are not too dismayed by this state of affairs. Many are looking to the neighborhood auto service stations and local car dealers as prospective customers—not for heavy equipment but for the comparatively new, low-cost auto washing machines. Choldun Mfg. Corp. (New Haven, Conn.), for instance, has come up with a unit designed to sell for around $395. It's offered in two models—air-driven or motor-driven—utilizes a dry syndet that Choldun itself will market under the name Magic Anti-Static Cleaner.

Another equipment outfit apparently looking to the auto service station business is U.S. Washmobile (Newark, N.J.), which is marketing a new washing unit called Golden Washmobile. It rolls back and forth over the car.

A host of other low-cost car wash units are aimed at the service station operator. Among them: Brushless Wash Inc. (Kansas City), Bobco, Inc. (Kansas City), Polaris Enterprises Inc. (Toronto), and Jet Wash Inc. (Tulsa).

If these units can increase the number of auto service stations that now offer car washing (about 15% of all stations do), it could create a sizable outlet for materials, may induce the oil companies to market their own brands of car-wash detergents.

Further ahead, there's an interesting development still in the research area but said to be getting consideration by such companies as Westinghouse. It's the idea of using electronically produced sound waves to remove dust and dirt but leave the paint. Such a development would probably not completely eliminate the need for washing materials, but it would cause a real shakeup in the present product lineup.



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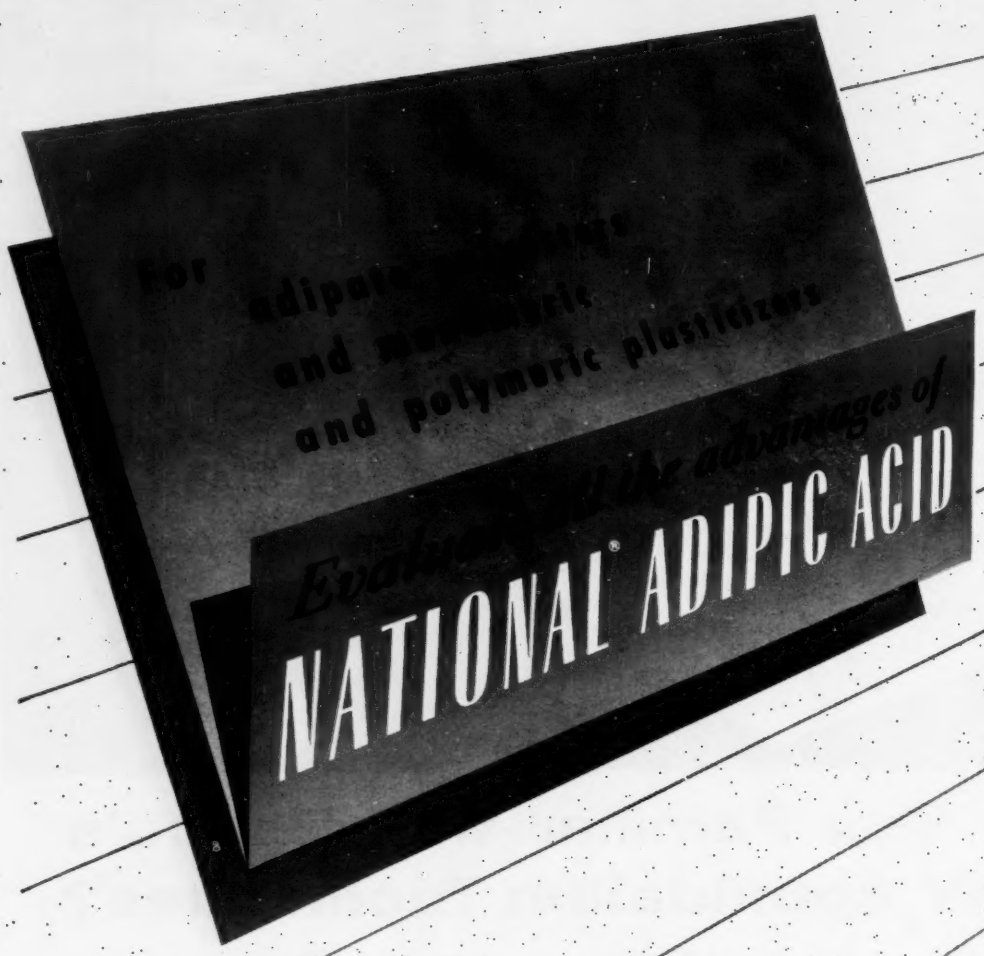

If you use or contemplate using Adipic Acid in elastomers, plastics, plasticizers, synthetic lubricants or as a chemical intermediate, we urge you to get a working sample and quotation from National Aniline.

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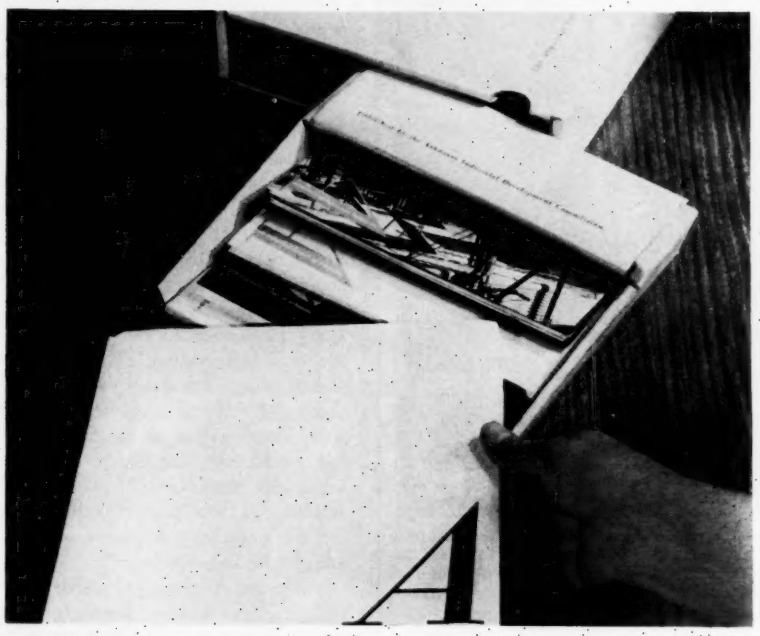


Industrial encyclopedia is designed for fast look at Arkansas.

States Step Up Promotion

Look for intensifying competition among states trying to attract industry. Typical competitive effort is the new "industrial encyclopedia" introduced last week by Arkansas Industrial Development Commission.

A file-size, four-volume compendium, the encyclopedia includes nondetailed facts, figures and photographs. It's designed, the commission says, to give a sweeping, thorough view of what the state has to offer. The first volume is an industrial directory, cross-indexed by manufacturers' names and locations. Second volume compares data on wages, output, consumption and population with similar statistics in a 10-state area surrounding Arkansas. Third volume contains a pictorial essay emphasizing the "small town" atmosphere and advantages of the state. Fourth volume is an economic atlas.

New Straws: But there are numerous other indications of freshening competition. In Mississippi, for example, the state's agriculture and industrial board has authorized creation of an industrial research center to aid industrial development, help meet increasing competition from other Southern states. The program will furnish data to industry, will coordinate facilities of the state's colleges and universities and other agencies engaged in such research.

In Richmond, Va., the seeds of another approach to industrial development have been sown. There, City Planning Director Burl Parks has declared that about the only way more industrial land can be developed in Richmond is through the city's exercise of its powers of eminent domain. Parks says it is impossible for private industry to assemble big tracts by purchase, because some owners nearly always block the way. He thinks that large slum areas could be assembled for industrial redevelopment if industry works with local development and welfare groups.

And in South Carolina, Bryant Cooper, a member of the state's development board, recommends that agriculture as an industry receive greater promotional stress, because advances in business farming will eventually free farm workers for other industries.

AMA Salary Survey

Middle-management executives in chemical process companies fared slightly better, financially, during the past year than their counterparts in other industries. That's one of the findings in American Management Assn.'s just-completed survey of 8,100 executives in 286 U.S. and Canadian companies.

The survey — AMA's seventh annual look at middle-management compensation — indicates that the average salary for executives holding 46 types of middle-management jobs increased 4.5-5.5%, from $11,240 to $11,800.

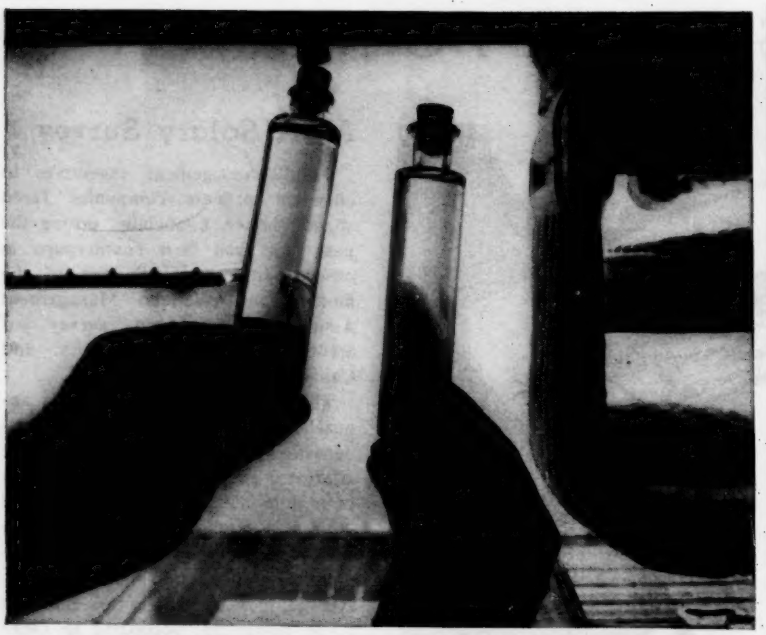
Process company middle-management men did better than the 4.8% average increase, came closer to the 5.5% maximum, according to Dean H. Rosensteel, director of AMA's executive-compensation service. Actually, because the survey was not conducted on an industry-by-industry basis (examination was by job content across industry lines), a precise breakdown of how various executive groups fared is not possible.

Rosensteel attributes the gains of process company middle-management executives to the probability that the late-'57 leveling off in business activity in process industries was not as great as it was in durable goods industries. The '57 adjustment is cited as the chief reason why salary increases over-all fell below average.

Canadian concerns increased the pay of their middle-management employees an average of 5.2% during the past year. But that country's middle-management group is paid on a lower scale than is its U.S. counterpart.

Bonus payments, the survey reveals, declined in amount and frequency, although process companies apparently did not resort to this economy measure as much as did industry in general. Bonuses were paid to 37% of the executives covered in the survey, compared with 45% the year before.

Looking to the future, Rosensteel feels that "in the interest of the American economy, middle-management jobs will continue to grow in importance and pay. It's all part of top management's desire to have better men in executive jobs, and better men cost more."



Superiority of GROCO 2 RED OIL revealed in unretouched photograph of low temperature test. Samples of GROCO 2 (left) and competitive red oil (right) were refrigerated at 36°F. for 24 hours side by side. No solids separated out of GROCO 2 RED OIL—it remained so transparent that technician's fingers and steel tray are clearly visible through vial. On right, solid acids separated in large amount.

Titre Is Lowest In GROCO 2 Red Oil

GROCO 2 RED OIL's exceptionally low content of saturated fatty acids—titre 3°C.—is advantage enough in itself to make it top choice for many processors. More than one producer of a liquid shampoo, for example, prefers GROCO 2 because it gives a formulation that stays liquid at low temperatures.

Equally outstanding is its oxidation stability. In the Mackey Test, GROCO 2 remained under 105°C. for 5 hours. There are no oxidation discoloration problems when you formulate with GROCO 2. And there is an absolute minimum of unusable components, making GROCO 2 the best money value of any red oil in its class.

You consistently enjoy an edge in storage, handling, processing and consumer acceptance when you "Always specify A. Gross"—whether your end products are soap, cosmetics, plastics, paints, polishes or emulsifiers.

Send for samples and brochure, "Fatty Acids in Modern Industry."

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ADMINISTRATION

Soapers' Wages Go Up

Producers of soap and related products will likely be paying higher minimum wages on government contract work by the end of September.

Secretary of Labor James P. Mitchell has just issued a "tentative decision" under the Walsh-Healey Public Contracts Act to raise the industry minimum wage for government contract work from $1.00 to $1.50/hour. Observers expect the new wage floor to go unchallenged.

The proposed determination follows the lines laid out during June hearings. Overriding two objections raised by one company (without support of the unions involved or of the Assn. of American Soap and Glycerine Producers), the Labor Dept. retains the definition of the industry and its products; and it continues to set the prevailing wage on a single, industry-wide basis.

The company had proposed a separate wage determination for the South, to preserve an alleged wage differential, which—it said—was needed to keep Southern plants competitive with those in the North.

Mitchell's decision to determine prevailing wages on an industry-wide basis is significant for future contracts in other industries.

KEY CHANGES

H. C. Greer to vice-president and executive director—finance, **R. G. Hemminghaus** to vice-president and executive director—staff services, **C. O. Hoyer** to vice-president and general manager—manufacturing and engineering, **F. G. Gronemeyer** to vice-president and director—nylon manufacturing; Chemstrand Corp.

Grant Thomas to president and director, American Synthetic Rubber Corp. (Louisville, Ky.).

John D. McPherson to executive vice-president, **Lynn R. Strawn** to manufacturing vice-president, and **Donald L. Griswold** to marketing vice-president, Jefferson Chemical Co.

CONSULTANTS

Lauren B. Hitchcock Associates (New York), newly established chemical engineering consulting and counseling firm.

PFIZER ANNOUNCES A NEW FORM OF VITAMIN B_{12} . . .

STABLETS*

The most stable Vitamin B_{12} form ever produced!

● Here is a new Pfizer development important to every manufacturer of multivitamin tablets, capsules and powders–B_{12} STABLETS*, a protected form of vitamin B_{12} (1% Vitamin B_{12} U.S.P. adsorbed on resin), that cuts potency losses by more than 50%.

In STABLETS, crystalline B_{12} is "tied up" on a pharmaceutical grade, ion-exchange resin. This resin so stabilizes the vitamin that it is not affected by vitamin C, ferrous salts or other reducing agents. Yet, the B_{12} content of STABLETS remains completely available to the human body.

Pfizer B_{12} STABLETS' outstanding stability has been proven in extensive tests. Studies based on a typical multivitamin formula, prepared in production run quantities, show that the use of STABLETS can allow the reduction of B_{12} overages by more than 50% compared to the use of crystalline triturations. In another test, a typical multivitamin tablet, containing STABLETS, was stored at room temperature for 12 months. The B_{12} potency loss was only 6% as compared with a 25% potency loss for tablets containing a triturated form of crystalline B_{12}.

Each gram of STABLETS contains 10 milligrams of anhydrous cyanocobalamin (vitamin B_{12} activity). This means easier handling for you–less bulk. Also, the vitamin B_{12} is evenly distributed over each and every resin particle –no distribution problems should be encountered even in formulations containing one mcg. or less per tablet. And, since the B_{12} in STABLETS is adsorbed on the resin, not coated by resin, it can be milled and exposed to moisture without effect.

WHAT DOES THIS NEW DEVELOPMENT MEAN TO YOU?

1. **STABILITY... most stable vitamin B_{12} form ever produced**
2. **ECONOMY... allows for reduced overages and assures long shelf life.**
3. **EASIER HANDLING... no elaborate processing techniques required**

Call your Pfizer Sales Representative, or mail in coupon below for full details.

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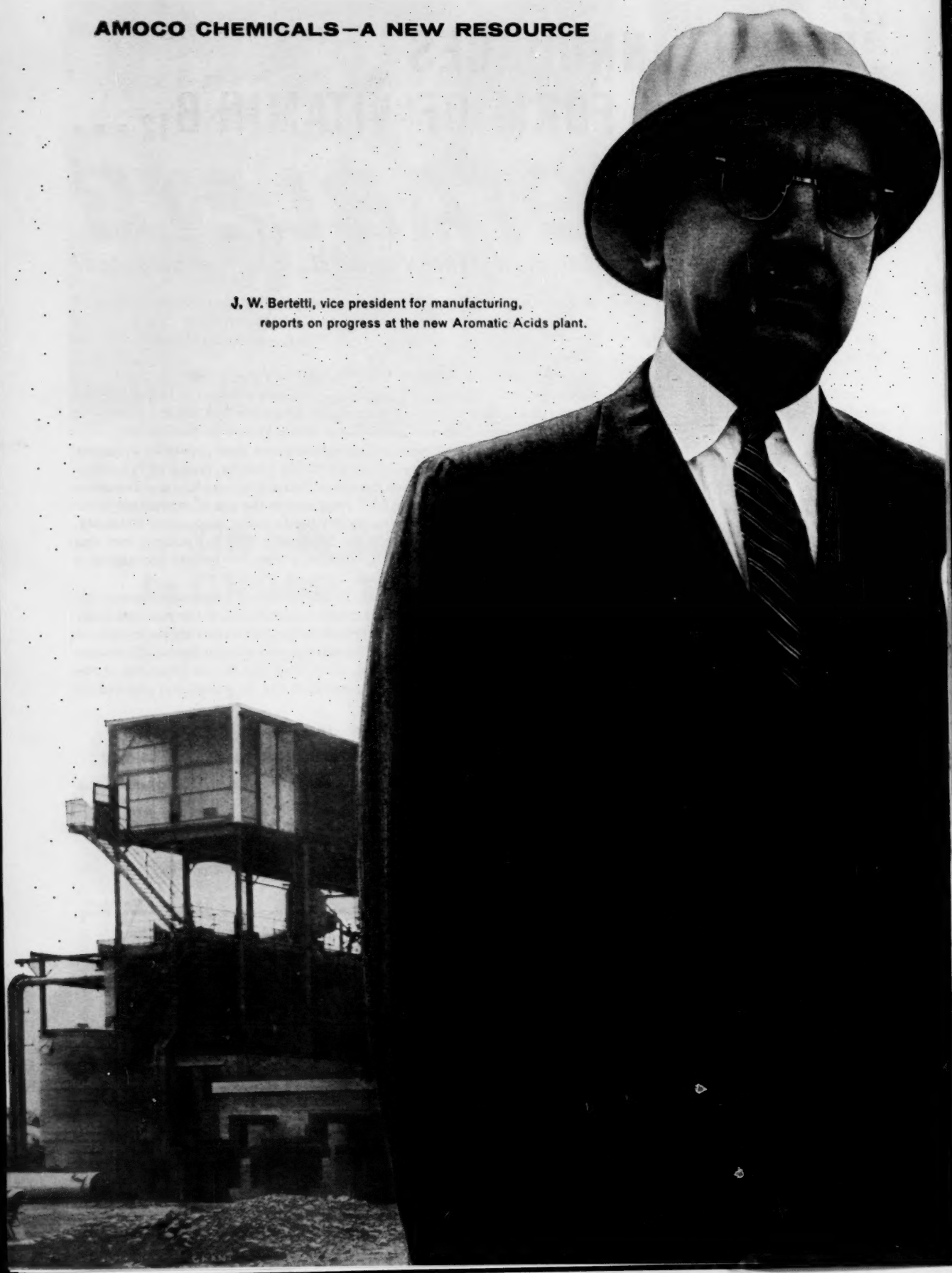
AMOCO CHEMICALS—A NEW RESOURCE



J. W. Bertetti, vice president for manufacturing, reports on progress at the new Aromatic Acids plant.

report from JOLIET

How AMOCO Chemicals is fulfilling its promise to become a new resource

Our new Aromatic Acids plant at Joliet, Illinois will be in production soon. From this facility we shall be able to offer the paint, plastics and chemical industries:

Phthalic Anhydride Isophthalic Acid Terephthalic Acid
Dimethyl Terephthalate Benzoic Acid

For the first time, users of phthalic anhydride and isophthalic acid will have a xylene-derived source of supply for these products located in the Midwest.

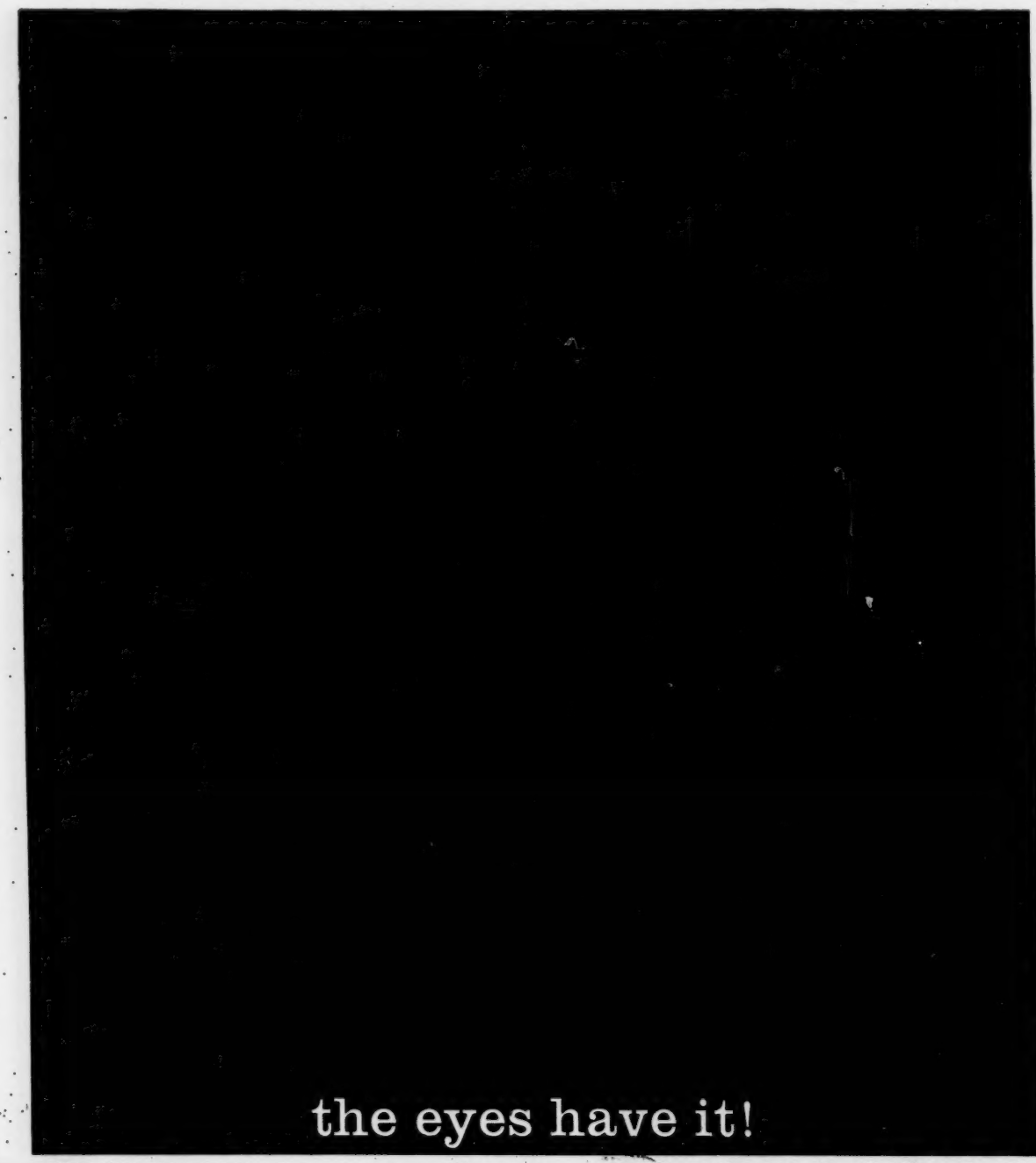
Our Aromatic Acids plant uses a unique process which oxidizes xylenes to acids of high quality in a single step. The process we are working with is extremely flexible. It makes possible the oxidation of a wide range of hydrocarbons, resulting in the production of many different intermediates. The opportunities are exciting.

It is the plan of Amoco Chemicals to be a new resource for industry. Our Joliet plant is a part of that plan. If you would like additional information about the products which will be offered from this plant, write us. Your letter will receive immediate attention.

AMOCO CHEMICALS

AMOCO CHEMICALS CORPORATION

910 South Michigan Ave., Chicago 80, Illinois



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PETROLEUM SOLVENTS

Where Technicians Double in Brass

This week, Clyde Wycoff (right) is helping to run a pilot plant at Tidewater Oil Co.'s Western Research and Development Dept. (Avon, Calif.). But, because of Tidewater's unusual plan for utilizing its technicians, the 25-year Tidewater veteran would be equally apt in the company's analytical lab or in any of a variety of other research jobs.

As do many other companies, the refiner uses research technicians to handle routine chores, freeing key scientific personnel for creative work. However, its nonprofessionals don't draw permanent assignments. Twelve men, under supervisor Raymond Frazier, comprise a pool from which the technicians can be drawn as needed.

Lionel Galstaun, supervisor of research, explains the plan yields three major benefits:

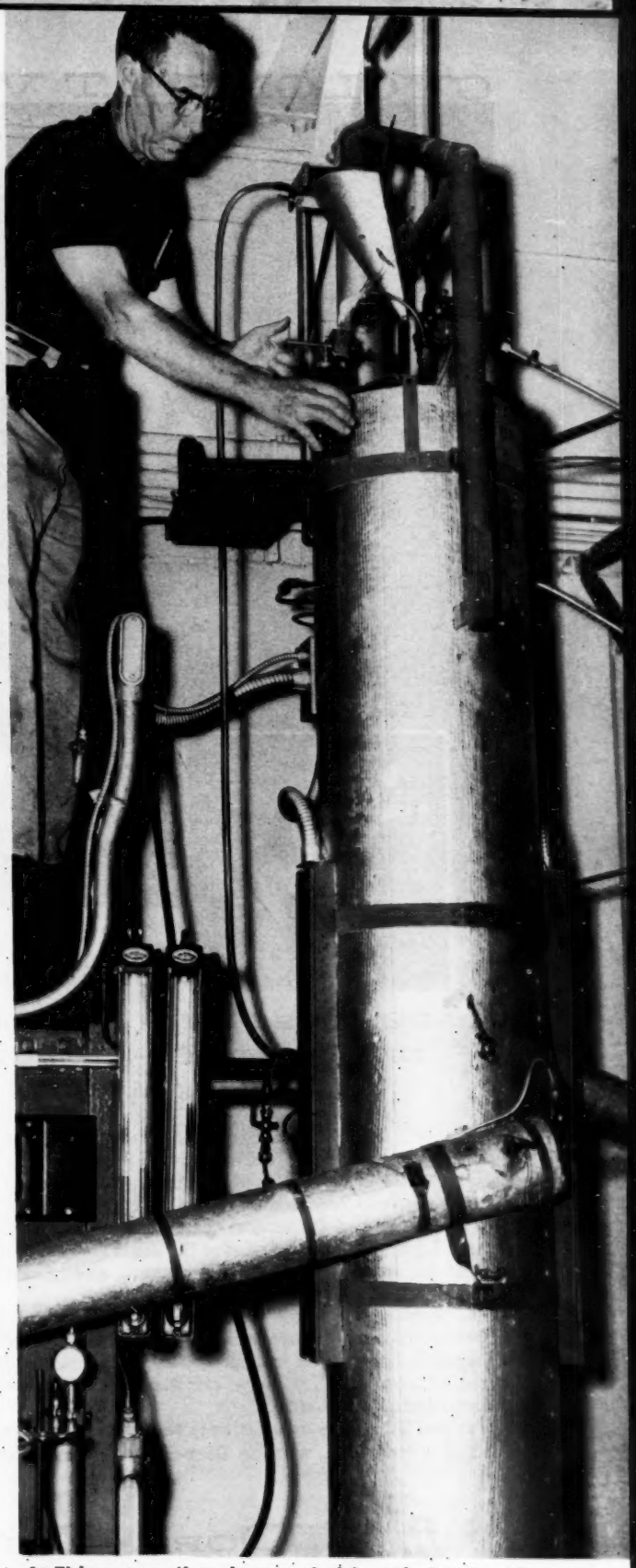
- Higher technician productivity results from increased flexibility in making assignments. There are 12 pilot plants or completely instrumented distillation units at Avon; and the technicians can operate any one of these. Before the pooling arrangement was set up (in 1946) each man could do only one job.
- Higher-quality personnel are attracted, because technician jobs are more interesting and pay liberally (a top of $494.50/month). This translates into greater technician reliability and efficiency. Previously, when technicians were assigned full-time to one professional researcher, it was difficult to attract capable people into what they considered a dead-end job.
- There's no turnover from resignations (zero percent since the program started) and, therefore, no time lost in training replacements. Because of the mutual benefits to Tidewater and its personnel, says Galstaun, "the men retire, but they don't quit."

Choice of Jobs: Four general areas of work for research technicians are the experimental refinery, pilot plants, the research laboratory, and the refinery technical-service department.

In the refinery, the men perform atmospheric and vacuum distillations, catalyst screening, preparation of sample gasoline and lube-oil blends, etc.

Pilot-plant operations include solvent treating, fluid cat-cracking, and the like, most of which are instrument-controlled or completely automated.

Typical lab assignments include gas chromatography analyses, evaluation of packing systems, and assisting chemists. Technical-service technicians collect samples and correlate data obtained from test runs in the refinery's production units. For example, they may record yields, temperatures and pressures during a test



At Tidewater pilot plant, technician Clyde Wycoff removes sample from midget catalytic cracker.

CYCLONE AT WORK

An important process tool for

CLASSIFICATION · DE-WATERING · DE-GRITTING · DE-SLIMING · SEPARATION

The cyclonic action depicted above is an artist's way of showing what happens inside a DorrClone wet separator. Feed entering tangentially under pressure in the upper section of the unit forms a swirling vortex. Centrifugal forces sometimes reaching as high as 8 G's throw heavier fractions in the feed to the walls of the conical chamber and down to the apex valve at the bottom. Light particles and most of the liquid move to the center of the vortex and out the overflow at the top. Continuous, closely controlled separation or classification is achieved without moving parts.

The DorrClone principle is adaptable to a wide range of operations in the processing industries. Units can be from 10 mm. to 6 feet in diameter. They can operate singly or in multiples. Their scope ranges from the separation of solids from heavy, abrasive slurries to precise operations in food and pharmaceutical processing.

Maybe a DorrClone installation is the solution to a problem in your plant. For full information, write to Dorr-Oliver, Incorporated, Stamford, Conn.

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run in a cat cracker or reformer, then perform calculations in connection with this data under the direction of engineers.

Getting Ahead: Frazier, who has 35 years' experience in the refining business, points out that a man can, via the research-technician route, eventually earn virtually the same pay as a top operator. But to become a research technician, a candidate must follow a formal line of job progression.

His first job is as operator No. 3 in the motor octane laboratories; then he may be elevated to the job of operator No. 2, then to that of operator No. 1. At this last stage, the prospect may choose to be a research technician in the experimental refinery or go on to higher positions in the motor or octane laboratories. In the experimental refinery, salary increases come every six months, subject to satisfactory performance. After 18 months, the top salary rung may be reached.

Frazier notes that these incentives have attracted capable refinery men to apply for research-technician billets. Since both the research and production operators are unionized, the swingover involves no particular union problem. In a few instances, refinery operators who have been on shift work have requested demotions so they could transfer to work leading to the research-technician level. Object: to avoid shift work. Ironically, some find themselves back on shift work in the pilot plants—although this is afternoon work, since there are now no "graveyard" shifts in the pilot plants.

Making the System Work: New men require close supervision during their first 18 months, Frazier says. Big factor is the help they get from veteran technicians. The newcomers' cooperation has been good. Job assignments are made on an informal basis. Usually, a man remains in the pilot plant for four to six months, is then transferred to another group. The duration of the research problem and the helper's satisfaction with his work have a lot to do with the time he spends on an assignment and the choice of his next one.

Frazier calls the pool system a "give-and-take proposition." It's working out, he concludes, to everyone's benefit.

The ULTRAWETS wet, penetrate, clean, emulsify

Professional's "secret"–
Atlantic ULTRAWET 60L

Professional hairdressers and beauticians have discovered the advantages of shampoos made with ULTRAWET 60L. This unique cosmetic grade alkyl aryl sulfonate is easy on the scalp, and leaves hair soft and lustrous.

ULTRAWET 60L is a pale yellow, viscous liquid composed of 60% organic alkyl aryl sulfonate and 40% water. It is immediately soluble in water and is clear and bright even at temperatures below 20° F.

Take a tip from the pros. Investigate Atlantic ULTRAWET 60L for *your* shampoo formulations. For full information, write or wire Chemicals Division, The Atlantic Refining Company, 260 South Broad Street, Philadelphia 1, Pennsylvania.

Philadelphia, Providence, Charlotte, Chicago
In Canada: Naugatuck Chemicals Division of Dominion Rubber Co., Ltd.
In Europe: Atlantic Chemicals SAB, Antwerp, Belgium
In South America: Atlantic Refining Company of Brazil, Rio de Janeiro

Catalin

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2,2'-Azo-Bis-Isobutyronitrile
Major use: Polyvinyl chloride blowing agent.

Sodium Amide
Major use: Preparation of aminopyridines, pharmaceuticals, dyestuffs, perfumes.

Alpha-Amino Pyridine
Major use: Manufacture of pharmaceuticals, and anti-histamines.

2,6-Di-Amino Pyridine
Major use: Preparation of pharmaceuticals.

Mucochloric Acid
Major use: Preparation of color film.

Parachlorometacresol
Major use: As a fungicide and preservative.

Thiosemicarbazide
Major use: Preparation of pharmaceuticals.

Heptaldehyde
Major use: Preparation of perfumes, pharmaceuticals. Also used as an accelerator for rubber and vinyl.

Undecylenic Acid
Major use: Preparation of pharmaceuticals.

11-Bromoundecylenic Acid
Major use: Preparation of pharmaceuticals.

Octyl and Nonyl Phenol
Major use: Preparation of surfactants.

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Major use: Organic synthesis and as a reagent in separating copper.

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Major use: Hardening agent and chemical intermediate. Pilot plant quantities.

Ultraviolet Absorber UV-1
. . . a cinnamic aldehyde derivative. Major use in methacrylate.

Bacteriostat CS-1
Major use: Soaps, shampoos, cosmetics, pharmaceuticals, etc.

Antioxidant CAO-1: 2,6-Ditertiary-Butyl-Para-Cresol
Major use: Aviation and high-octane gasolines, turbine and jet engine fuels.

Antioxidant CAO-3: (Food Grade) Butylated Hydroxy Toluene
Major use: Animal feeds, edible fats, oils, food wrappings, pharmaceuticals, etc.

Antioxidant CAO-5: 2,2'-Methylenebis (4-Methyl-6-Tertiary-Butyl Phenol)
Major use: White and light-colored rubber, tires, household and medical products.

Antioxidant CAO-6: 2,2'-Thiobis (4-Methyl-6-Tertiary-Butyl Phenol)
Major use: Polyethylene wire coatings, rubber and petroleum products.

Catalin welcomes inquiries from manufacturers using these chemicals in their research and production process.

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EXPANSION

• University of Virginia Hospital (Charlottesville, Va.) will add another floor to its present structure, to house a cancer research laboratory. Cost: $419,000.

• Molecular Biology Institute has been established at State University College of Forestry at Syracuse University (Syracuse, N.Y.). Major research areas: plant biochemistry and biophysics.

• Crown Zellerbach Corp. (San Francisco) and Hawaiian Sugar Planters' Assn. will spend $600,000 to build new labs for expansion of research on utilizing bagasse for paper manufacturing.

• Corning Glass Works (Corning, N.Y.) has established a new research group to coordinate glass-melting research, development and customer service activities.

• Reichhold Chemical Co. (White Plains, N.Y.) plans a new plastics laboratory in San Francisco. It will house research facilities for evaluating the reinforced plastics used in aircraft and missiles.

PRODUCTS

Thermal Barrier: Formica Corp.'s (Cincinnati) new modified Formica FF-34 laminated plastic reportedly will withstand temperatures up to 2500 F for eight minutes. It has been seeing service in experimental uses in aircraft.

•

Cadmium-Silver Coating: American Silver Co. (36-07 Prince St., Flushing, N.Y.) is out with a cadmium-silver clad phosphor bronze strip. It's suggested for electrical contacts where a springy material is needed.

•

Halogen Carrier: N-bromo-N-chlorodimethyl hydantoin is available under the tradename Dihalo from Bromine Producers Co. (Adrian, Mich.). It's reportedly unique among halogen carriers (containing positive bromine and chlorine), shows promise in germicide, rubber formulation.

•

Reactive Thiol: American Cyanamid Co.'s (New York) latest offering is 2-aminobenzenethiol, an intermediate suggested for producing cyanine dyes, thiazole dyes and rubber accelerators.

NO. 4 OF A SERIES

The men that

make the most of them . . .

test your Polyol I. Q.

How well do you know your Polyols? Here are questions about a few of the hundreds of Polyols that Dow makes. Some of them are common as can be, some not so common, others you may not have heard of. How many can you name? **TIME ALLOWED: 4 MINUTES. READY . . . GO!**

1. What Polyols are used extensively as plasticizers in cellulosic sponge and film?

* * * *

2. What applications of the polyethylene glycols have been interesting the pharmaceutical industry lately?

* * * *

3. What Polyol inhibits mold growth, and because of its low toxicity can be incorporated in food, pharmaceuticals and cosmetics?

4. What Polyols, because of their unique selective solubility for aromatics, are used in processing large tonnages of benzene, toluene, p-xylene?

* * * *

5. Name three of the six basic molecules used by Dow to build its Polyols.

* * * *

6. For what application is the alkyd resin industry a potential consumer of polyethylene glycols?

7. What Polyol is recommended as an antifoam agent in P.V.A. and styrene butadiene latex paints?

* * * *

8. The polyethylene glycols are widely used as intermediates in the production of esters for a variety of uses. Name three major applications for these esters.

HOW TO SCORE—A score of 4 out of 8 puts you in the top half of the class, 6 makes you a real promising Polyoler, and 8 out of 8 makes you a Professor of Polyolotry. If you think you have earned it, write for this free "Certificate of Commendation" testifying to your Polyol prowess. 12" x 15" suitable for framing. Include your full name so the certificate can be personalized.

We hope this quiz whets your appetite to know more about Polyols. Many brochures, technical papers and bulletins, including Dow's new folder, "World's Widest Line of Polyols", are available from your nearest Dow sales office. Or, write THE DOW CHEMICAL COMPANY, Midland, Michigan, Department GD 952A.

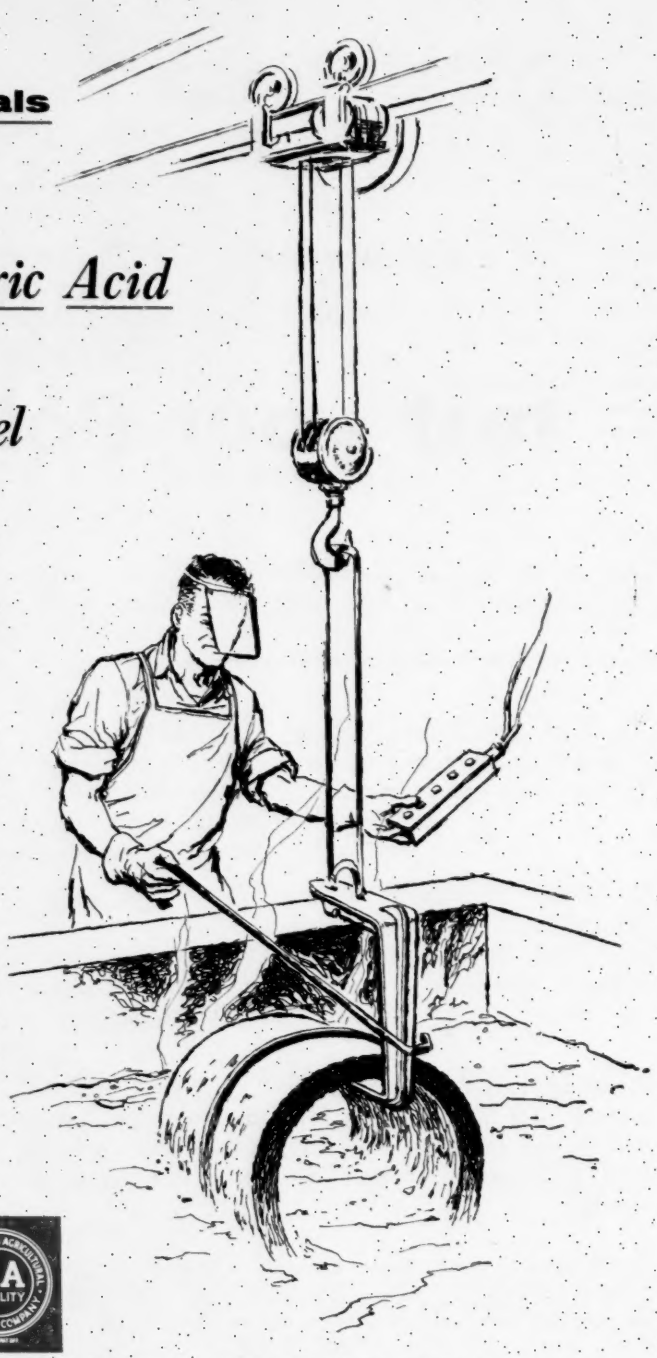
ANSWERS:

1) Polyethylene Glycols. 2) As bases for lotions and salves and as binders and coaters for tablets. 3) Propylene Glycol USP. 4) Udex® Brand Diethylene Glycol, Udex Brand Dipropylene Glycol, 5) Ethylene Oxide, Propylene Oxide, Butylene Oxide, Styrene Oxide, Epichlorohydrin, Ethylene Carbonate. 6) Manufacture of water dispersible alkyds. 7) Polypropylene Glycol P1200. 8) Emulsifiers, Plasticizers, Lubricants, Emollients, Antifoamers.

YOU CAN DEPEND ON DOW

AA Quality Chemicals

AA Quality Phosphoric Acid helps clean the nation's steel



Widely used by the nation's metal-working industries for pickling and coating of steel (*both* in *one* operation) and for polishing aluminum, AA QUALITY Phosphoric Acid assures the highest standards of quality and uniformity.

AA QUALITY Phosphoric Acid is made from 99.9 per cent pure Elemental Phosphorus . . . a product of our own electro-thermal process and our own ample reserves of phosphate rock. Strict quality control is maintained at every stage of manufacture.

If you would like information on how Phosphoric Acid or any other AA QUALITY Chemical can be used in your operation, please write our research department on your letterhead. Samples and data sheets will gladly be furnished.

The American Agricultural Chemical Company

Chemical Division: 100 Church St., N. Y. 7, N. Y. • 33 plants and offices serving U. S., Canada, Cuba

AA QUALITY® PHOSPHORUS PRODUCTS

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Phosphorus Red (Amorphous)
Phosphorus Pentasulphide • Sesquisulphide
Ferro Phosphorus (Iron Phosphide)

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Disodium Phosphate • Trisodium Phosphate
PHOS-FEED® BRAND Dicalcium Phosphate

PHOSPHORIC ACID
85% N.F. Grade • 75% Pure Food Grade
50% Pure Food Grade
Agricultural and Other Grades

PHOSPHATE ROCK & FERTILIZERS
All grades Florida Pebble Phosphate Rock
Superphosphate
Complete Fertilizers
AGRINITE®

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Ammonium Silicofluoride
Magnesium Silicofluoride
Potassium Silicofluoride
Sodium Silicofluoride
Zinc Silicofluoride
Silicofluoride Mixtures
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KEYSTONE® Gelatin: Edible, Photographic Pharmaceutical, Technical

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Technology
Newsletter

CHEMICAL WEEK
August 2, 1958

Another new diborane process has been developed by Roland Koester of the Max Planck Institute for Coal Research (Mulheim-Ruhr, Germany). Koester's latest method starts with boron trioxide and trialkyl aluminum. A cyclic trialkyl boroxole is formed, which reacts with more trialkyl aluminum to produce a trialkyl borane (BR_3). That's reduced with hydrogen to form the diborane.

Previously, Koester had worked up a method using sulfuric acid and fluorine (*CW, May 25, '57, p. 48*). In this country, the commercial processes for making diborane, the important building block for the new high-energy boron fuels, depend on the reduction of a boron halide with either sodium borohydride or lithium hydride.

•

A hypersonic wind tunnel may ease a process industry problem: the development of new materials for rocket nose-cones and related items. Convair Division of General Dynamics (San Diego, Calif.) is putting in a $500,000 hypersonic gun. It will be able to drive projectiles through a 100-ft., 3-in. barrel into test chambers at speeds up to 20,000 ft./second. Or, it can shove high-pressure, high-velocity gases past a stationary model in the test chamber.

•

First details of the new "quick pinch" fusion technique developed at Britain's Atomic Weapon Research Establishment (Aldermaston) are disclosed in Atomic Energy Authority's fourth annual report. With the new method, the gas plasma is heated primarily by the compression effect of the "pinch," instead of by the ohmic heating process employed in the Zeta apparatus (*CW, Feb. 1, p. 20*).

Key to the Aldermaston system is the exceedingly high rate of increase in discharge current made possible by the use of very-low-inductance electrical circuits. Recent measurements indicate that initial rate of current rise may be as high as 5 trillion amperes/second. As this discharge current passes through a sheath of ionized gas near the wall of fusion tube, it causes the sheath to accelerate violently toward the axis of the tube. The resulting compression of the plasma takes only a few millionths of a second, is known as cylindrical shock heating compression.

Initial importance of the Aldermaston technique, says AEA, may lie primarily in its use as a preheating mechanism to trigger the ohmic heating process in a Zeta-type apparatus. It could conceivably be employed in the Zeta Mark II, which is currently being designed to achieve the 100-million-degree "breakeven" temperature required for a self-sustaining fusion reaction.

•

Titanium for the chemical industry got a boost this week with the teaming of Titanium Metals Corp. of America and Deutsche Edelstahl-

werke (leading specialty steelmaker in Germany) for production and marketing of titanium in Europe. The new company, Continental Titanium Metals Corp., will carry on the German firm's development program in production and fabrication, aimed specifically at chemical and petrochemical producers.

Titanium Metals expects the exchange of technical information with the new firm to broaden applications in this country, where developments have been tied closely to the needs of titanium's top consumer, the aircraft industry. Headquarters will be in Luxemburg, chief production facilities at Krefeld.

•

Montecatini will use a new formaldehyde process, developed by Giulio Natta, to expand production at Castellanza, Italy, from 36,000 to 60,000 tons/year. It's a methanol oxidation that reportedly uses a metallic-oxide catalyst instead of silver. Claimed result: a high-purity product with less than 1% methanol—no stripping and rectification of alcohol is required. Use of metallic-oxide catalysts, as such, isn't brand-new, of course. Reichhold, for example, developed a metallic-oxide process for which it made similar high-purity claims several years ago (*CW, Feb. 28, '53, p. 67*).

•

Congress is going all out in support of medical research. A House-Senate conference recently voted $294.3 million for the National Institutes of Health, the medical-research arm of the U.S. Public Health Service. The total is about $83.3 million higher than the amount sought by the White House, which wanted to hold the appropriation to last year's $211-million level.

The new funds also include: $19.4 million—an increase of $7 million—for cancer chemotherapy contracts with the pharmaceutical industry and independent labs; and $4 million to launch a new program of contract research for the development of screening techniques for new drugs for mental illness. The lawmakers clearly stated that contracts will be "democratically negotiated" between NIH and pharmaceutical houses that wish to participate.

•

The first privately owned beryllium fabricating plant in the U.S. was put into operation at Hazleton, Pa., last week by The Beryllium Corp. (Reading, Pa.). The plant chips and grinds cast beryllium ingot to −200 mesh powder for hot pressing in a vacuum furnace. Bulk of output is earmarked for nuclear uses, with small amounts going into research and development of aircraft structural components.

•

Eli Lilly is out with the first broad-spectrum anthelmintic for human use. Called Delvex, the compound is a blue polymethine dye (3,3′-diethylthiadicarbocyanine iodide), which destroys or eliminates the four intestinal parasites that cause more than half of the world population's worm infections.

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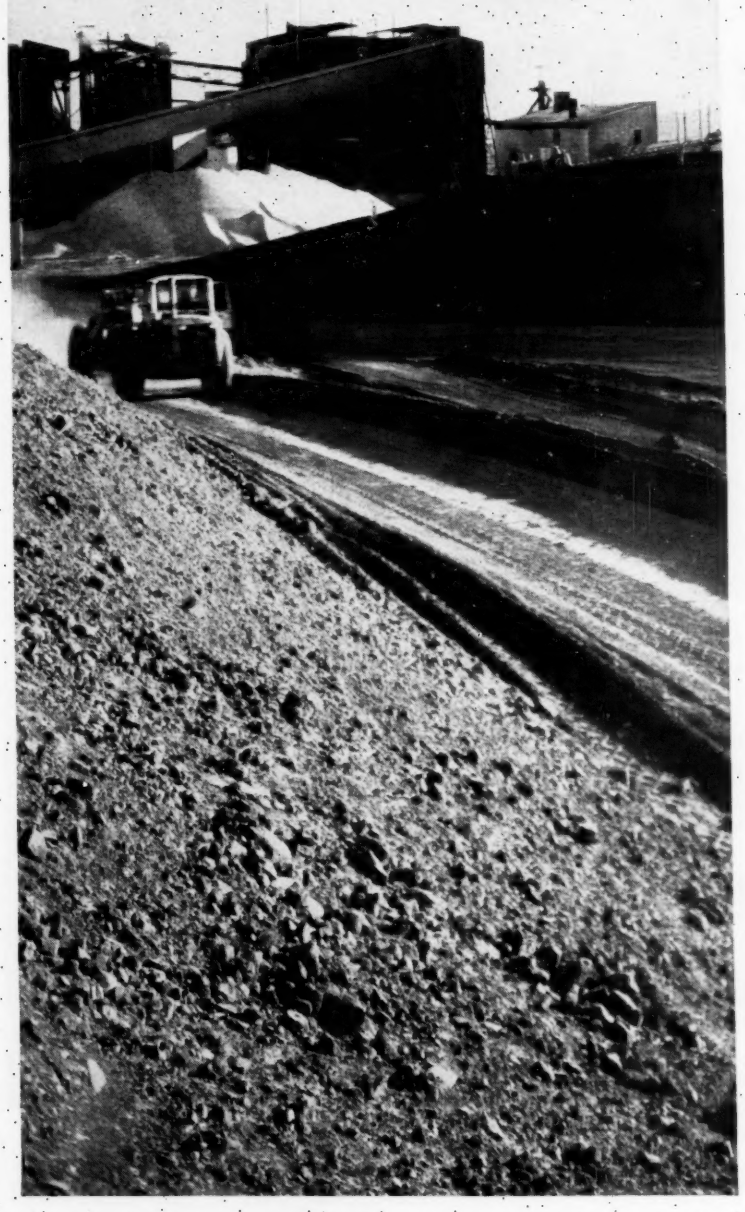

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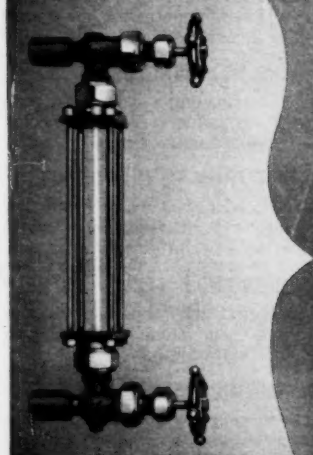
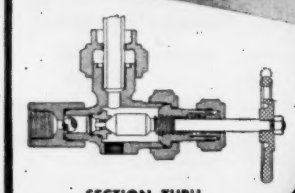
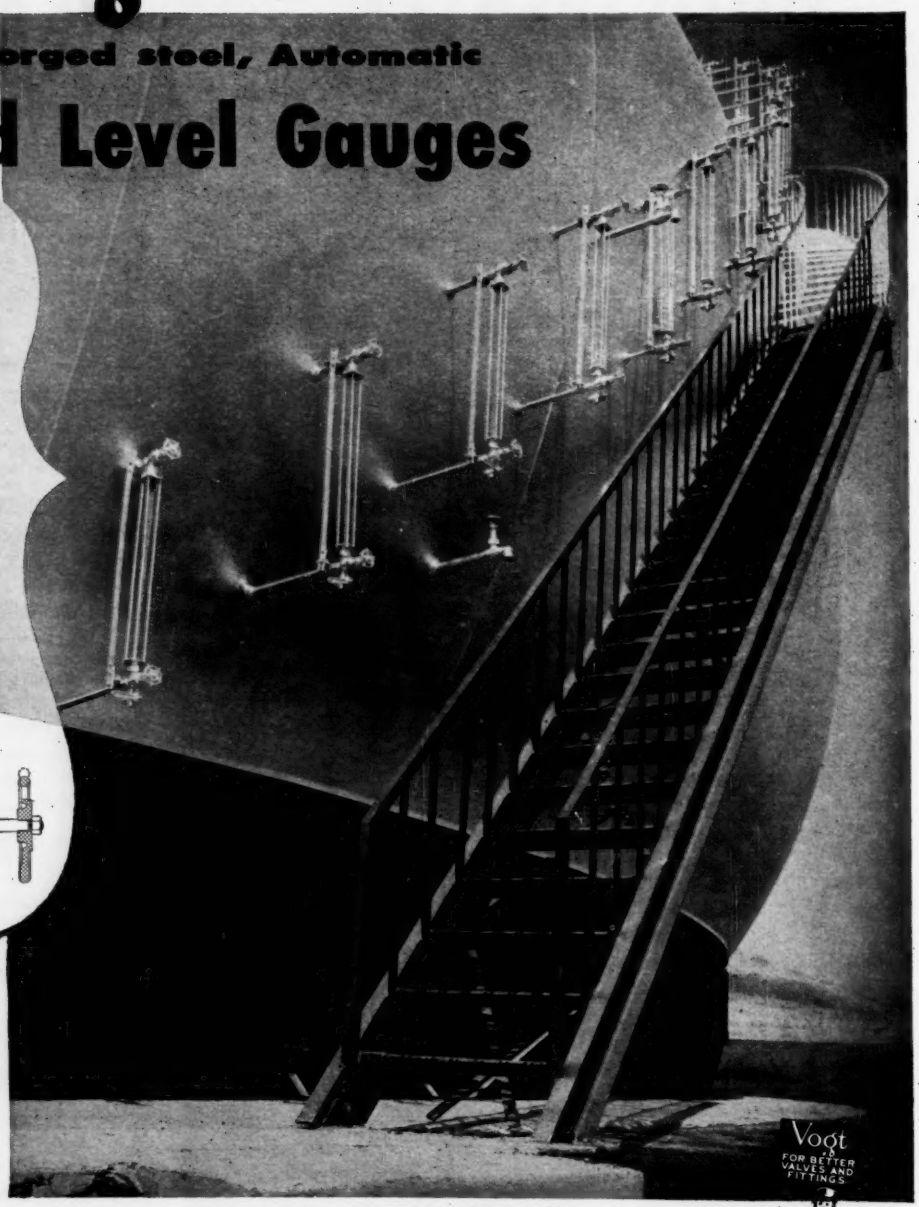




SECTION THRU GAUGE COCK



See Catalog F-9 for complete data on gauge cocks, trims, and gauge glasses for specific operating conditions or write Dept. 24A-FCW.

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In New Safety Data, a Jar to Complacency

The charts and tables (right) give the chemical industry double cause for concern over its safety record for the first time in seven years. As the just-released National Safety Council figures show, accident frequency and severity rates rose in '57.

The accident frequency rate increased 5% from '56, to 3.55 (measured by the number of disabling injuries per million man-hours worked). It marks the first time since '50 that the accident frequency rate failed to show improvement. The severity rate increased 16% from '56, to 536 (measured by the number of days lost per million man-hours worked). Again, it was first time since '55 that the severity rate failed to improve.

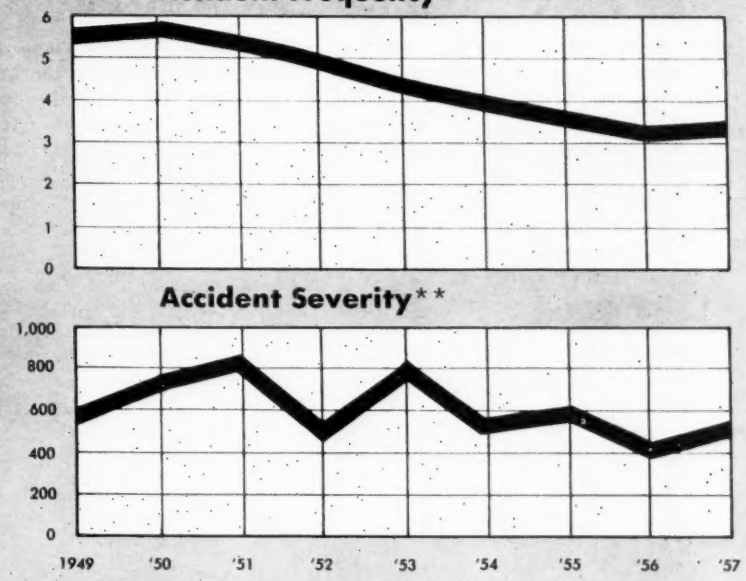
Despite these slips, the '57 safety record was the second-best the chemical industry has chalked up since '23. But it does buck the trend of the 39 other industries reporting to NSC. The over-all industrial record showed a slight drop in frequency and less than 1% increase in severity. The chemical industry dropped from eighth to ninth in accident-frequency and from 16th to 17th in accident-severity rate in the 40-industry list.

Individual Standings: Of the 18 segments of the chemical process industries that collectively make up NSC's chemical industry statistics, high-explosives manufacturers had the lowest accident frequency record; chemical laboratories had the best accident severity rate. Only seven of the 18 industries improved their frequency rates, and eight bettered their severity rates in '57.

The alcohol and wood-distillates makers showed the greatest rate improvement in accident frequency—almost 50%. And they, along with fuse and powder makers, improved their severity rate over 80%.

In frequency rate, only three segments of the process industries—high explosives, plastic materials, and fuses and powder—turned in rates below two disabling injuries per million man-hours. Six groups improved in '56.

In severity rate, only two groups—labs, and alcohol and wood distillates producers—came through with rates



Chemical Process Industries	Accident Frequency*		Accident Severity**	
	1956	1957	1956	1957
Acids	4.40	5.25	560	244
Alcohol and wood distillates	12.58	6.69	923	173
Chlorine and alkali	5.03	3.96	989	668
Coal-tar products	4.72	3.60	1,520	875
Fats and oils	9.83	11.16	854	1,894
Fertilizers	10.82	8.27	1,953	777
Fuses and powder	2.88	1.92	2,111	369
High explosives	1.59	1.34	363	649
Industrial gases	7.01	7.36	178	414
Laboratories	1.52	2.13	164	90
Paint and varnish	3.82	3.73	293	270
Pharmaceuticals, fine chemicals, cosmetics	3.91	5.36	215	840
Photographic film	1.56	4.86	109	293
Plastic materials	1.58	1.61	362	383
Salt	9.08	9.47	222	315
Soap and glycerine	3.51	3.95	169	845
Synthetic fibers	1.68	2.24	217	355
Synthetic rubber	1.42	2.78	122	545
All chemical process industries	**3.38**	**3.55**	**462**	**536**

*Frequency rate is number of disabling injuries per 1 million man-hours of exposure.
**Severity rate is number of days lost per 1 million man-hours of exposure including charges for permanent disabilities and deaths.

below 200 days lost/million man-hours; five industries had this score in '56.

Small or Large Firms Best? Although there is some chance of error in comparing safety records from different sources, Manufacturing Chemists' Assn.'s safety report made earlier this year tends to confirm NSC's figures. MCA figures showed that accident frequency and severity rates hit a plateau in '57, were just about the same as in '56, (although 397 plants of 46 MCA-member firms—a new high—received safety awards for completing the year without industrial injuries). MCA's member list includes many of the larger firms, while NSC's longer membership list presumably includes many smaller firms. Comparing NSC and MCA records would seem to confirm the contention of some safety directors that the larger firms usually chalk up the better safety records.

But regardless of company size, '57 safety records show that it's time for all chemical industry's members to take a new look at their safety programs. Although the accident rate is still one of the best in industry, the industry can't afford to rest on its record.

EQUIPMENT

Corrosion-Resistant Pump: Carbon gears and bearings are the key to a new pump for wet or dry operation in corrosive service, now offered by Eco Engineering Co. (12 New York Ave., Newark 1, N.J.). Available in 3 gpm. and 10 gpm. sizes, the pump is suggested for use at temperatures up to 450 F, speeds up to 1,800 rpm.

•

Wire Sleeving: Alpha Wire Corp. (200 Varick St., New York) is out with a new zippered sleeving (made of Bakelite vinyl plastic) designed to speed the assembly of enclosed electrical wiring, yet leave it readily ac-

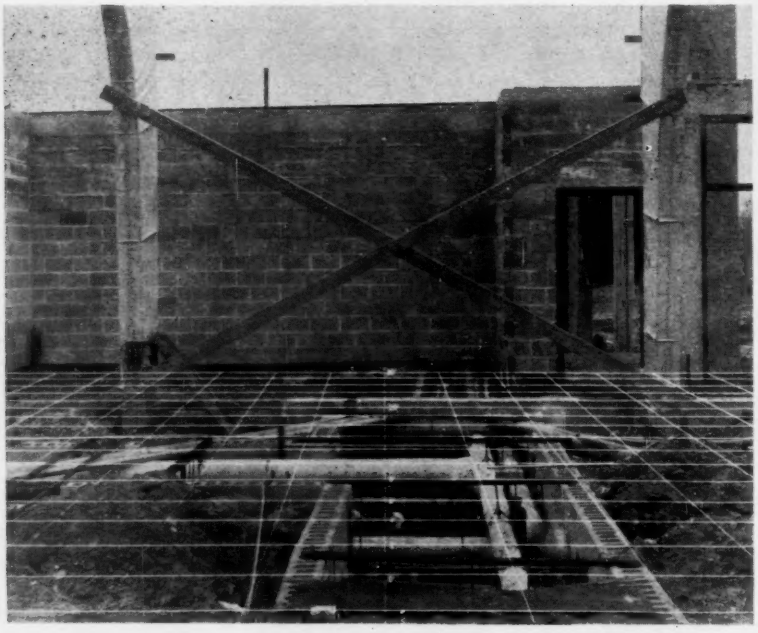
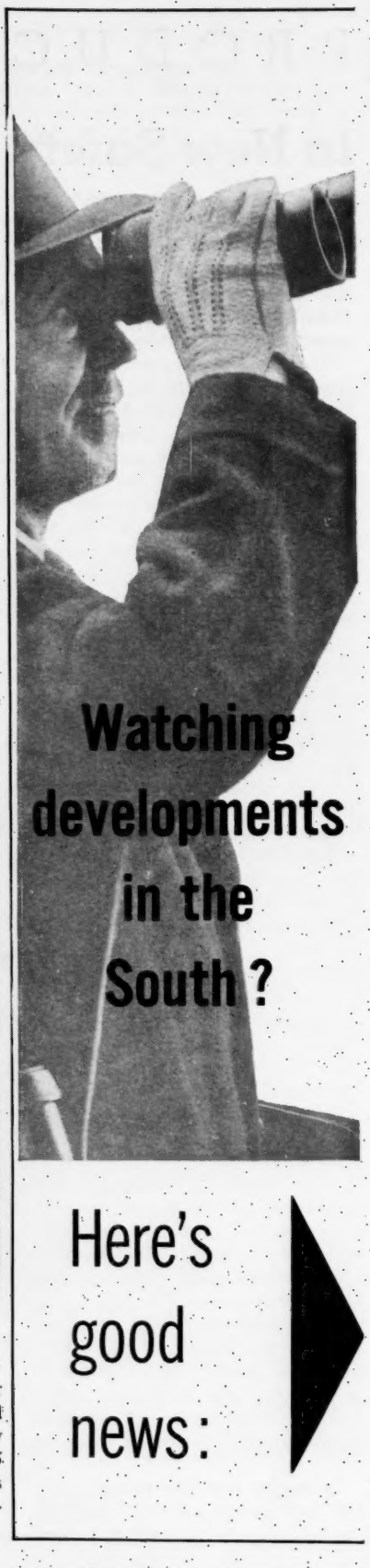


Photo Blueprint for Future Repairs

The perspective grid superimposed on the above photo exemplifies a new method of extending the usefulness of photos in planning building changes and repairs. The grid is made up specifically for each camera and lens, makes it possible to pinpoint the location of pipes, conduits and other items that will be hidden by walls and floors. The method was developed by Photo Perspective Corp. (6645 Devonshire, St. Louis) for 4x5 press cameras, to which an accurate leveling device has been added.



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If your company is eyeing the growing South for new plant sites – or if you're already established there – you will want to look into this new source for ethylene oxide, ethylene and diethylene glycols, nitrogen, chlorine, caustic, hydrogen, and related products.

The location – just south of Baton Rouge, on the Mississippi River – is readily accessible by rail and truck. . . . *and* to oceangoing vessels, allowing low-cost shipment anywhere in the South, the Gulf, along the Atlantic seaboard and the Pacific coasts – as well as to foreign ports. Inland waterways permit economical shipment as far north as Minneapolis-St. Paul . . . and to other cities in the Midwest and South via tributaries like the Ohio and Tennessee Rivers.

Many industries in this rapidly growing area will be served. They include: pulp and paper, petrochemicals, petroleum refining, nonferrous metals, plastics, textiles, solvents, insecticides, herbicides, and refrigerants, to name a few.

This means Wyandotte now has expanded multi-plant facilities to further insure our many customers of a continuous supply of products . . . that Wyandotte is growing with the growth industries it is privileged to serve. But even more important, it is clear-cut evidence, translated into action, of the tremendous confidence Wyandotte has in the future. If you'd like to know more about how this program will benefit you, contact your nearest Wyandotte representative, or write: *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Offices in principal cities.*

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cessible for maintenance. The plastic sleeve is extruded as a sheet; the zipper is heat-sealed to it.

•

Vacuum Dryers: F. J. Stokes Corp. (5500 Tabor Rd., Philadelphia 20) is out with a new line (Model 159) of conical-shaped rotating vacuum dryers in a range of six sizes: 3, 10, 25, 75, 100, and 150 cu. ft. Rotating at 6 rpm., the conical dryers are said to provide better tumbling action and to be superior to conventional cylindrical-shaped dryers in charging and discharging the material that is to be dried. Double-walled construction allows either steam or hot-water heating.

•

Insulation Tester: VON 100 KV is the designation for a new insulation test instrument offered by Hewson Co. (443 Broad St., Newark 2, N.J.). Rated at 5 ma. output at 100 kv. dc., the unit evaluates the condition of the insulation of large motors, generators, transformers, other equipment, thus reducing chances of breakdown. The 80-lb. assembly is portable, sells for $3,400. Larger units are available, rated at 150, 200, and 250 kv.

•

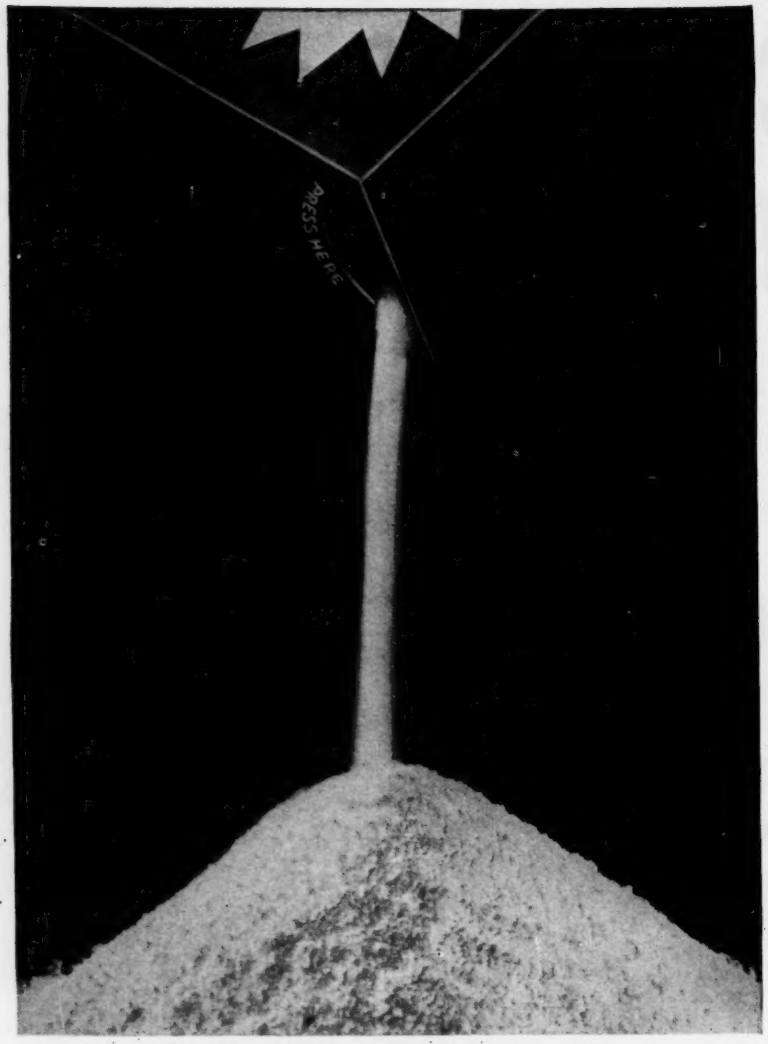
Calibration Indicator: Norwood Controls (Norwood, Mass.) is out with a new precision read-out device, called ElectroSyn Model 850 Precision Indicator. Combined with Norwood's ElectroSyn standard pressure transmitters, the indicator is designed for accurate and rapid calibration of pressure instruments. Accuracy: better than ±0.25% full scale.

•

Self-Dumping Hopper: A new self-dumping hopper with a stainless steel corrosion-resistant liner is now offered by Apex Welding & Fabricating Corp. (Bedford, O.). The hopper is automatically dumped by releasing a gravity cam switch at the rear of the unit. After the load is dumped, the hopper rights itself, returns to the closed position and locks itself. Five sizes are available: capacities of ½, ¾, 1, 1½ and 2 yards.

•

Axial Flow Fans: Series 300 is a new line of motorized, axial flow fans, called Tubeaxial, offered by Westinghouse Sturtevant Division (200 Readville St., Boston 36). The seven sizes in the series mount directly in ducts and stacks from 18 to 42 in. Fan ratings: 2,410 to 36,700 cfm.



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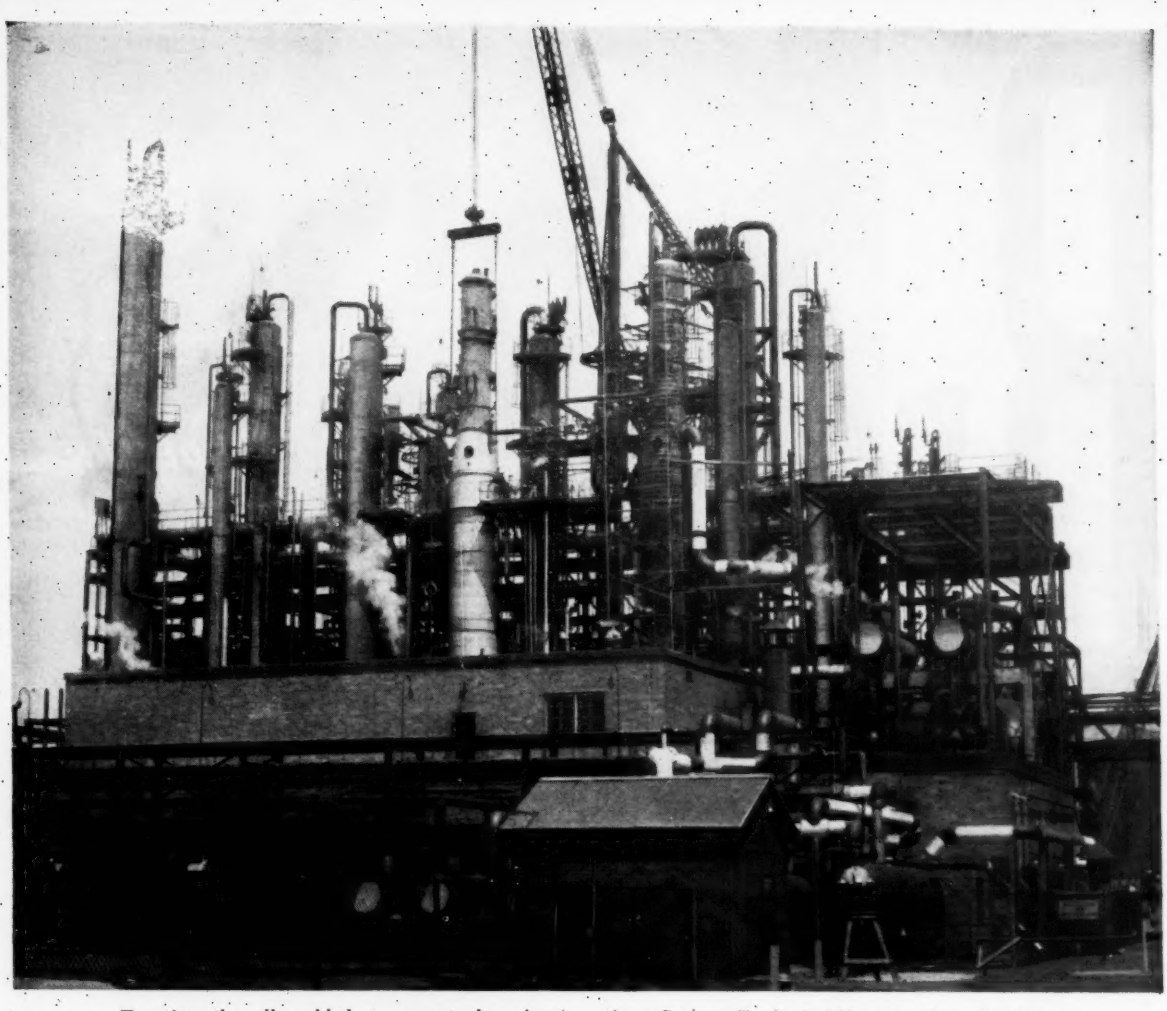
For further information and a list of Sun offices, consult Chemical Materials Catalog.



Erecting the all-welded, two-part chromium-nickel stainless steel recovery tower at Gary chemical works of United States Steel Corporation. Graver Tank & Mfg. Co., Inc. of East Chicago, Indiana, fabricated the 90-foot tower and tested it to pressures of 162 psi and 246 psi.

Stainless steel tower goes up...corrosion comes down... in recovery of aromatic chemicals from coke oven gases

This chromium-nickel stainless steel tower recently took over an important job at the Gary Steel Works Coke & Coal Chemicals Div. of U. S. Steel. The big vessel receives hot absorption oils from other parts of the processing plant . . . puts them through its six-tray light oil section, and 15-tray light oil stripper . . . recovers benzene, toluene, and xylene.

It's a productive but highly corrosive process. So corrosive that it knocked out a carbon steel tower in relatively short time. That's why for its replacement the Gary Works decided on Type 304 ELC chromium-nickel stainless steel. This nickel-containing stainless steel can take the corrosive effects of these gases and chemicals . . . it assures *long* service life.

For your corrosion problems, it will pay you to consider nickel-containing stainless steels. They are highly resistant to a wide range of organic and inorganic chemicals.

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Market Newsletter

CHEMICAL WEEK
August 2, 1958

A split price in store for phthalic? It will probably be the trade's answer to Amoco Chemicals' bombshell notice earlier this week that it would solicit phthalic anhydride business at 17¢/lb., c.l., f.o.b. plant, with freight equalized.

Amoco's tag is a fat 4¢/lb. under the price that phthalic-from-naphthalene producers have doggedly maintained for almost two years, despite bloated U.S. capacity, slackened demand, and rough intraindustry competition.

There's no doubt that some makers were verging on a panic move to meet the lower price. And it could still happen. But by now there has been time for a searching appraisal of Amoco's announcement—and blood pressures have subsided.

First, it has become clear that the newcomer isn't promising delivery of phthalic Nov. 1, as many mistakenly thought. Amoco makes the point clear to *CW*, explains that its new Joliet, Ill., plant "would come onstream about Nov. 1" and that actual delivery would depend on whether startup difficulties were encountered. With new equipment, and a new process—oxidation of a mixed xylene stream instead of the more usual naphthalene oxidation—even Amoco officials don't rule out the possibility of shipment delays.

Another factor bolstering the likelihood of a split price: shrewd marketers estimate Amoco's phthalic potential at a meager 12 million lbs./year—some 4% of current U.S. output—and figure this isn't a big enough tail to wag the dog. (The oil company won't comment on the phthalic estimate, admits only that a total of about 60 million lbs. of product will come out of Joliet.)

The isophthalic acid market is also under fire because of Amoco's announcement. The material will be "offered at the same time and under the same terms and conditions (as phthalic anhydride) at a mol equivalent price of 15.2¢/lb."

Oronite is now the only producer of isophthalic, tags its material at 1¢/lb. higher than going phthalic anhydride prices. Oronite, at press time, hadn't altered its schedules, and chances are that the firm will sit tight until it knows what course the phthalic sellers will take.

Oronite is well aware, of course, of the problems of isophthalic manufacture—it took the company years to achieve commercial production. On that basis alone, it's a good bet that Oronite will hold off matching Amoco's price—at least until the latter begins delivering.

One other question phthalic observers are pondering: will Amoco's promised 17¢ price tag scare off potential phthalic producers?

At least two companies have already begun laying the groundwork for new phthalic plants, and there's talk to the effect that a group of users have been hashing over a deal to put up a cooperative phthalic facility.

With most major producers currently operating at less than 70% of capacity and with demand still dragging, a cut-rate price looms as a powerful deterrent to any new entrant.

•

Polystyrene makers are also in a dither—especially those that sell to the important southern California market. Reason: Granada Chemical (Saugus, Calif.) is moving ahead with polystyrene production plans. The newcomer has already begun construction of a plant, although it hasn't decided on the unit's ultimate capacity.

There's speculation, though, that the new installation will initially turn out about 250,000 lbs./month. That's relatively small, measured by national production rates. But what bothers present producers is that Granada could probably easily boost capacity should it snare an increasing share of Western polystyrene business.

Incidentally, Granada is headed by James Keysor, of Keysor Chemical (also at Saugus). The latter company recently started up the West Coast's first polyvinyl chloride plant at Saugus. The unit can turn out about 500,000 lbs./month of PVC.

•

Prices of several vitamin B_{12} products are down for the second time in a year. Included in the reductions: cyanocobalamin USP (crystalline vitamin B_{12}), now at $190/gram, a drop of $25; triturations of cyanocobalamin 0.1%, down to $218/kilo from a previous $247; cyanocobalamin in gelatine 0.1%, reduced $35/kilo to $225.

•

Competition is behind last week's cut in nickel oxide price. International Nickel says it is reducing its 75% material (packaged) to 69.6¢/lb. of contained nickel to compete with Cuban nickel oxide produced and sold by the U.S. government.

INC's new oxide price, f.o.b. Buffalo or other established point of U.S. entry, compares with a previous tag of 70.25¢/lb., unpacked, f.o.b. Copper Cliff, Ont. Freight costs from Copper Cliff to the border amounted to more than 1¢/lb.

SELECTED PRICE CHANGES—WEEK ENDING JULY 28, 1958

	Change	New Price
UP		
Mercury metal, 76-lb. flask, net flask	$1.00	$230.00
Tin metal (Straits)	0.0025	0.9625
DOWN		
Copra, Atl., Gulf ports, c.i.f., ton	$1.50	$192.50
Vitamin B_{12}, cryst., 1-50 grams, vials, tins, gram	25.00	190.00

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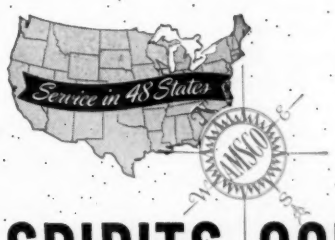

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At Pittsburgh Plate, tons of chemical raw materials make mammoth ribbons of rough plate glass.

Glass Sales Pause; Production Pushes On

People who live in glass houses—or drive modern cars—have in recent years helped spur big expansion in the U.S. glass industry. But the recession-fostered drop in buying of houses and cars has jolted some glassmakers, as this week's batch of half-year reports shows*. And it will plainly affect purchases of chemical raw materials, too.

Hardest hit in the glass industry are makers of flat glass; sales by Libbey-Owens-Ford, says its report, fell 22% in the first half of '58, compared with sales in the same period in '57. (Plate and window glass together comprise about 90% of total flat glass output. About 80% of all window glass, 15% of all plate glass, is used by the building trades. The auto industry takes about 70% of all plate glass.) Soaring glass imports also nettle U. S. producers. When U.S. tariffs on glass products were cut from $1.55/lb. in '46 (to the present 72¢/lb.), imports of window glass soared—from 96,000 sq. ft. in '46 to 275 million sq. ft. (figured on single-strength-glass basis) in '56.

Container Boom: Slower sales of flat glass do not, however, reflect conditions in all areas of the glass industry. Apparently recessionproof, so far, are the glass container makers, who are still scoring sales records.

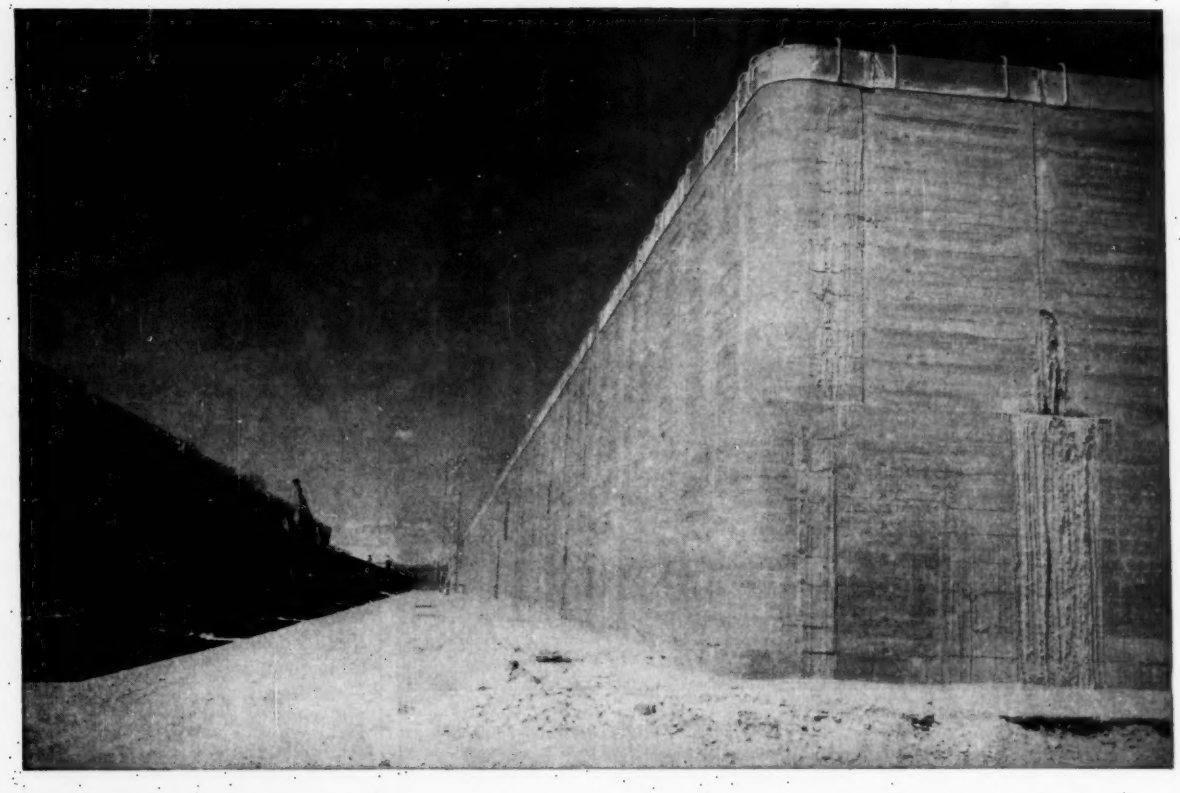
But even in recession-hit areas, expansion continues unabated. Pittsburgh Plate Glass, for example, recently dedicated its 50-million-sq. ft./-year, $34-million factory at Cumberland, Md. *(pictures)*.

And at Decatur, Ill., PPG is constructing "the nation's first truly automatic" window glass plant. It's slated for completion before '59—a few months before scheduled completion of the company's multimillion-dollar, 25-million-lbs./year glass fiber plant at Shelby, N.C.

The activities of Libbey-Owens-Ford since World War II also underscore confidence in future markets; LOF's capacity for making window glass has been upped 56%; Thermopane, 220%; plate glass and safety glass, each about 166%.

One trade estimate puts the sales volume of glass fiber at more than $200 million in '57. Its growth poten-

*For example, Libbey-Owens-Ford Glass Co.'s first-half '58 earnings (not sales) fell to $5,941,827, compared with $14,279,561 last year.



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tial is immense. Expanding markets, for example, are: building insulation, air filters, ceiling boards, reinforced plastics, textiles.

The electronics industry, too, is a big consumer of glass in many forms; including electron (radio) tubes ($374 million worth of finished tubes sold in '56) and TV picture tubes (10.9 million units, valued at $196 million, sold in '56).

Glass Hopper for Chemicals: Big item on the list of chemical raw materials that funnel into glass manufacture is soda ash. Producers expect about 1.5 million tons will be used this year to make flat, pressed and blown glass and containers *(CW, May 3, p. 71)*.

This looked-for demand is lower than the estimated 1.6 million tons used in '57, is about on a par with the 1.5 million tons consumed in '54. Consequently, breakdown data for '54 —the latest available—provides some indication of how much soda ash will go into various types of glass this year. Production of flat glass in '54 required use of 276,200 tons of soda ash; glass containers took 1,121 million tons; pressed and blown glass, 143,000 tons.

About 1.3 million tons of soda ash were used in '57 to make glass for containers; this checks with a reported 15% increase in unit output of glass containers in 1954-57 (146.3 million gross units were made in '57).

Good estimates of soda ash used in flat, pressed and blown glass in '57 are not available. But sales trends suggest that less was used in '57 than in '54. The dollar value of flat glass sold (producers won't discuss actual volumes) dropped 40%, from $370 million, in '54, to $223.8 million, in '57; in the same period, value of pressed and blown glass declined 3.7%, to about $394 million.

Official data on consumption of other chemicals by the glass industry three years ago are also considered roughly indicative of '58 requirements. These amounts were shipped to glass producers in '55 (short tons): selenium compounds (as Se), 76.7 tons; antimony, 1,028; barite, 28,737; fluorspar, 32,482; lime, 276,399 tons.

Some 50,000 tons of crude salt cake went into flat glass in '54; silver nitrate consumption was reportedly somewhat more than 2.8 million oz. And one estimate puts borate demand

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for glass at 25% of total U.S. borate consumption.

Many More: The list of raw materials required by the glass industry also includes oxides of potassium, magnesium zinc, barium and lead—used for fining, oxidizing, decoloring and coloring operations. Oxides of cobalt, nickel, copper, iron, chromium, uranium, manganese and antimony are some materials used to color glass. Others are gold chloride, selenium, sodium uranate and cadmium sulfide.

In decoloring of glass, color is removed in two basic ways: (1) by oxidizing with chemicals such as manganese dioxide, potassium and sodium nitrates; (2) by adding complementary colors. Among additives used for this are manganese dioxide, nickel and cobalt oxides, cerium (often with neodymium), or combinations of selenium and cobalt oxides.

Other chemical raw materials used in manufacture of glass: alumina; arsenic; barium carbonate and sulfate; bismuth; borax and boric acid; calcium carbonate, fluoride and phosphate; carbon; chrome; red lead; silica; sodium sulfate; tin; zinc.

Newer materials are constantly being added to the list. New fluxing compounds of rubidium and cesium have recently been made available. And as the supply of lithium chemicals becomes increasingly plentiful, more will likely be used in glassmaking. Total consumption of lithium minerals in glass manufacture in '57 was about 18,000 tons; slightly more will probably be used in '58.

One Market Basket: The size and variety of chemical purchases made by glass producers is apparent from the following partial list of raw materials required by one glassmaking plant—the Ford Motor Co. plant, opened last year at Nashville, Tenn.

Each year, it consumes an average of almost 200,000 tons of grinding and silica sand, 19,000 tons of soda ash, 12,000 tons of limestone, 5,500 tons of salt cake, 1,500 tons of feldspar, 13,000 tons of dolomite for flux, 6,000 tons of plaster, 1,000 tons of rouge (fine iron oxide) and copperas (a hydrated iron sulfate used for polishing), and 2,000 tons of sheet vinyl for lamination. Liquid raw materials used by the plant yearly include: lubricating oils, 225,000 gal.; muriatic acid for grinding and polishing, 310,000 gal.

Plastics Menace? U.S. glassmakers apparently take no stock in the prediction that plastics will make glass obsolete. Conversely, producers of flat glass point out that plate and window glass are used for purposes that, for the most part, are not suitable outlets for plastics.

Makers of glass containers appear equally unworried. They note that glass containers are still making the biggest gains in cosmetic packaging—the very area in which competition from plastics, especially in the form of squeeze bottles, has been most intense. In '57, for the third consecutive year, U.S. shipments of new glass containers hit a new high, passed the 20-billion-unit mark for the first time. Sales volume was $784 million, well over a billion dollars if closures are included. Glass containers now account for about 8% (10%, including closures) of a $10-billion-plus total packaging business; this means that glass, while it ranks behind fiber and steel, is well ahead of wood, plastic and aluminum packaging.

Thousands of different types of consumer products are, of course, packed in glass containers, but they can all be lumped into five general categories, including exports.

In '57, more than 8.3 billion units, 41.4% of the total domestic market, were used in food packaging. Next-largest consumers were drugs and cosmetics, which used about 5.07 billion units, 25.2% of the total.

Bottling of beverages last year accounted for almost 5 billion units, 24.7% of the market. Smallest category was the packaging of chemicals (including household and industrial products), which required some 1.76 billion units amounting to 8.7% of the total glass container market. Close to 435 million units—about 2.2% of total output—were exported in '57.

Incidentally, food containers not only comprise the largest single category but also have shown the fastest growth. Shipments of glass containers to food processors in '57 exceeded by 231% the quantity sold in '39. Second-fastest in growth, although the smallest in actual volume, were chemical containers.

Clearly, glass producers predict a bright future; and what they foresee adds up to a broad and expanding market for a host of chemicals.

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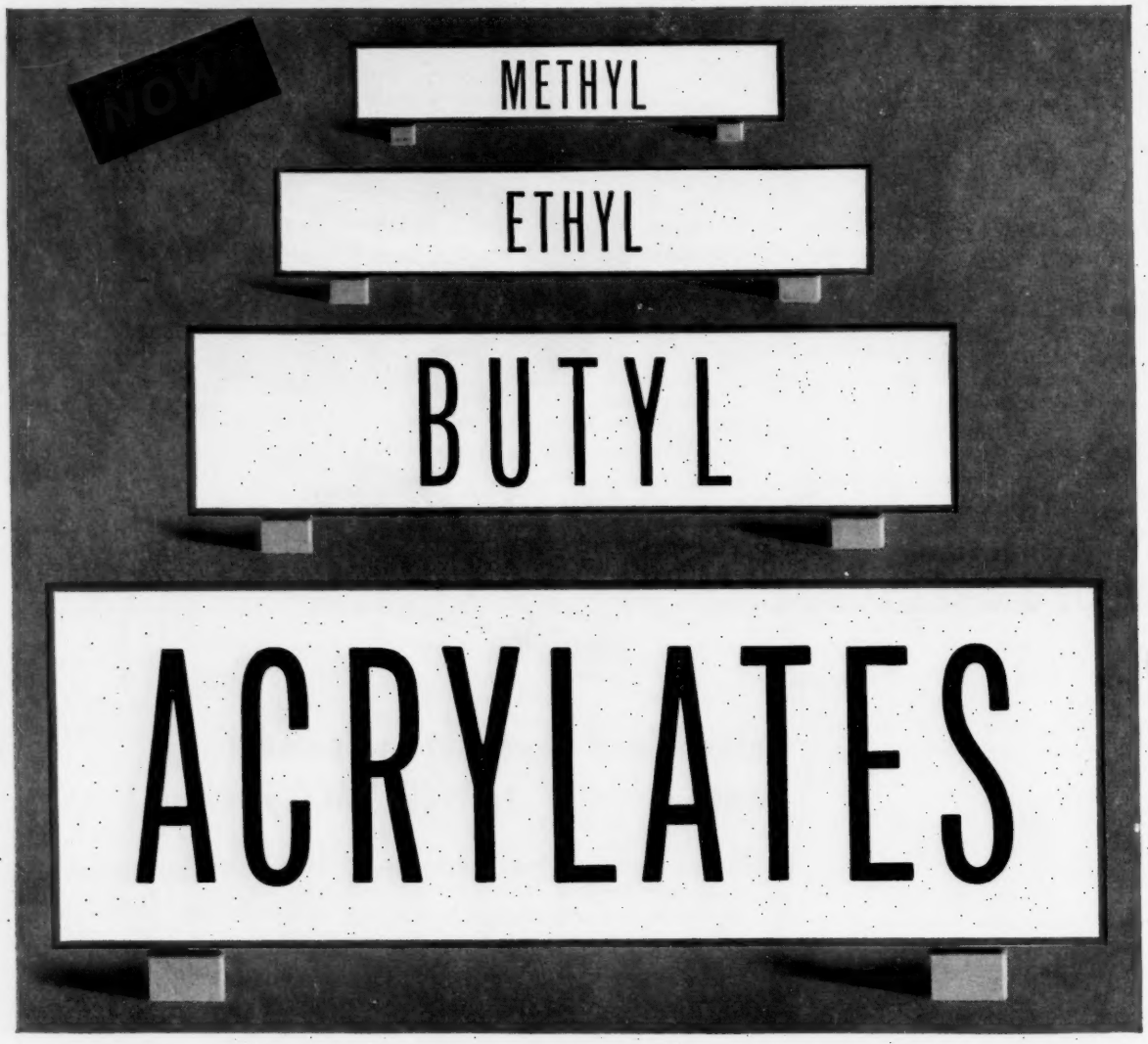

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Three advantages of Hoko nitric acid process:

flexibility — direct oxidation of ammonia, either with air or with oxygen, produces 98-99% nitric acid, can be modified to produce red fuming nitric acid, nitrogen tetroxide and/or nitric acid at all other concentrations.

simplicity — direct route eliminates auxiliary units conventionally required for dehydrating weak nitric acid to high concentration and for reconcentrating the sulfuric acid used as dehydrating agent.

compactness — unit can operate entirely on oxygen to minimize size of production equipment; low-capacity units are small enough to permit mounting on a trailer.

Direct Nitric Route Yields Tetroxide Too

The potential upsurge in nitration-process and missile requirements for high-concentration nitric acid is prompting nitric producers to take another look at the Hoko process, which can produce both acid and tetroxide directly from ammonia.

An outgrowth of the German-developed, Italian-invented Fauser process, the Hoko process (for *ho*ch *ko*nzentration) is widely used in Europe but has yet to make its U.S. debut. Reason: European producers, faced with a chronic shortage of sulfur, naturally favor a system that doesn't require large quantities of sulfuric acid for final concentration of high-strength nitric acid. American producers, on the other hand, can readily obtain sulfuric, generally prefer to stick with the well-established ammonia oxidation-sulfuric concentration route in which most producers already have big investments.

The U.S. picture could change, predicts Bamag-licensee F. H. McGraw & Co. (New York),* if current work with hitherto little-used nitrogen products turns up new process technology. For example, nitrogen tetroxide's potential use as a missile-fuel oxidizer has aroused considerable interest. And there are indications, says McGraw, that red fuming nitric acid would be a very desirable reagent for many processes that now use concentrated nitric. To date, the high cost of red fuming nitric (around $200/ton) has limited its potential as a commercial processing reagent. But a commercial-size Hoko process can turn out red fuming nitric for an estimated $46-50/ton, makes this product a bright—though possibly still distant—commercial prospect.

*McGraw has an exclusive licensing arrangement with Pintsch Bamag AG. (West Germany) to engineer, construct and sell Hoko process units in the U.S. and Canada.

Direct Route: The conversion of ammonia into 98-99% nitric acid in a Hoko plant involves three successive stages of oxidation. The first unit in the system is a catalytic converter in which ammonia is burned with oxygen or air to produce nitric oxide (NO) and water. Hot gases then pass through a waste heat boiler and on to condensers, where excess water is removed from the gas stream.

The gas stream is next blown into the second oxidation unit, where the nitric oxide reacts with remaining oxygen to form nitrogen dioxide. Heat of reaction is removed by indirect cooling, after which an absorption system recovers essentially all oxides of nitrogen before tail gas (largely inert nitrogen) is exhausted to the atmosphere. Absorption liquid is recycled through external coolers; is finally pumped from primary absorption section to a raw acid tank as a mixture of nitric acid and nitrogen tetroxide (N_2O_4).

Prior to the final stage of oxidation, two liquid streams—one from the second oxidizer and one from the absorption section — are thoroughly mixed with liquid tetroxide recovered from the final product acid. The combined streams are pumped from the mixing vessel into a continuous high-pressure autoclave for the final stage of oxidation. Here, sufficient oxygen (95-96% O_2) is injected into the autoclave to cause practically all of the water in the mixture to be used up in the formation of nitric acid.

The product leaving the autoclave contains some unreacted tetroxide. This is stripped from the concentrated acid for return to the mixer. Regular product is water-white nitric acid at 98-99% concentration; but by a

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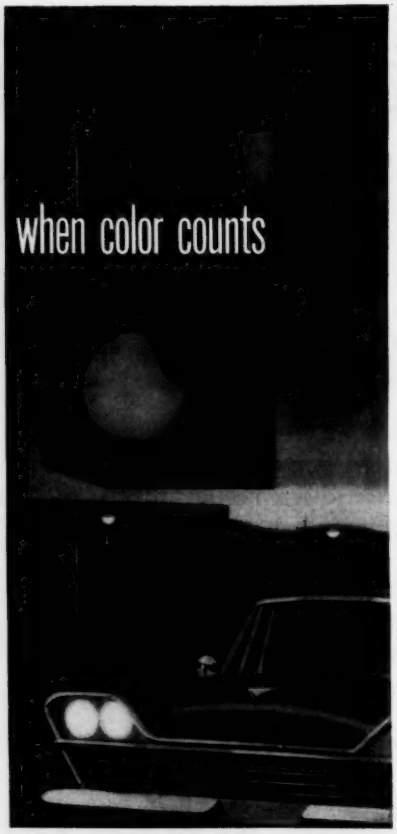

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simple adjustment, red fuming nitric can be produced. Side streams yield tetroxide, plus weak acid, which can be blended with the concentrated product to provide acid of any desired strength.

Oxygen Option: Oxygen requirements for the final stage of oxidation are relatively small, says McGraw, can usually be met by adding only a few tons of oxygen capacity to the air separation facilities normally required for the ammonia plant. Typical requirements for a 100-tons/day Hoko installation: 17 tons/day of oxygen, 29 tons/day of ammonia.

But if by-product oxygen is readily available (e.g., from a chlorine plant or other sources), it can be used to advantage for the ammonia-burning operation. And it need not be pure oxygen—even partial enrichment of the air fed to the first stage reduces the quantity of inert nitrogen that must be handled and, therefore, the size and cost of processing components. Savings of up to 40% on equipment costs are possible, says McGraw, if the plant can be designed to operate entirely on oxygen.

A good example of the compactness of a Hoko plant is a mobile plant designed by McGraw for self-sufficient operation on four trailers. The plans call for a 5-tons/day Hoko unit complete with a self-contained 5-day supply of ammonia and bottled oxygen.

Though it's readily adaptable to small-size installations, the Hoko process has also proved its ability to handle large-capacity production. Biggest Hoko installation to date is an 880-tons/day plant built in Eastern Germany (Silesia) by Bamag and subsequently "liberated" by the Russians. This plant consisted of two 440-tons/day reaction trains, with some common components capable of handling the output of both. (For comparison, largest reaction trains used in U.S. nitric acid plants are the 250-tons/day units engineered by Chemical Construction Corp. for Allied's Hopewell, Va., plant and for Escambia.)

Future: McGraw feels there will be a large general growth of demand for red fuming nitric and for nitrogen tetroxide. And the company is confident that when it comes producers will find the advantages of the Hoko process are worthy of their close consideration.

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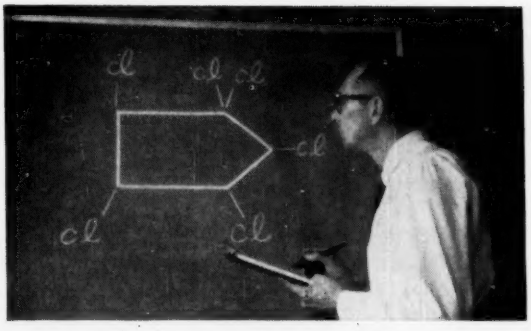

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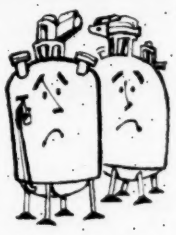

Sulfates in muriatic, for example, could gum up your process with an insoluble precipitate when you work with something like benzidine dyes. Or they could cause serious extraction losses if you're refining certain high-grade metals, such as radium.

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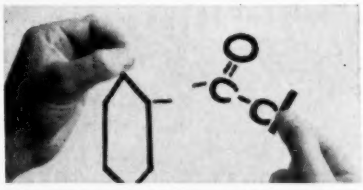

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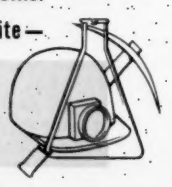

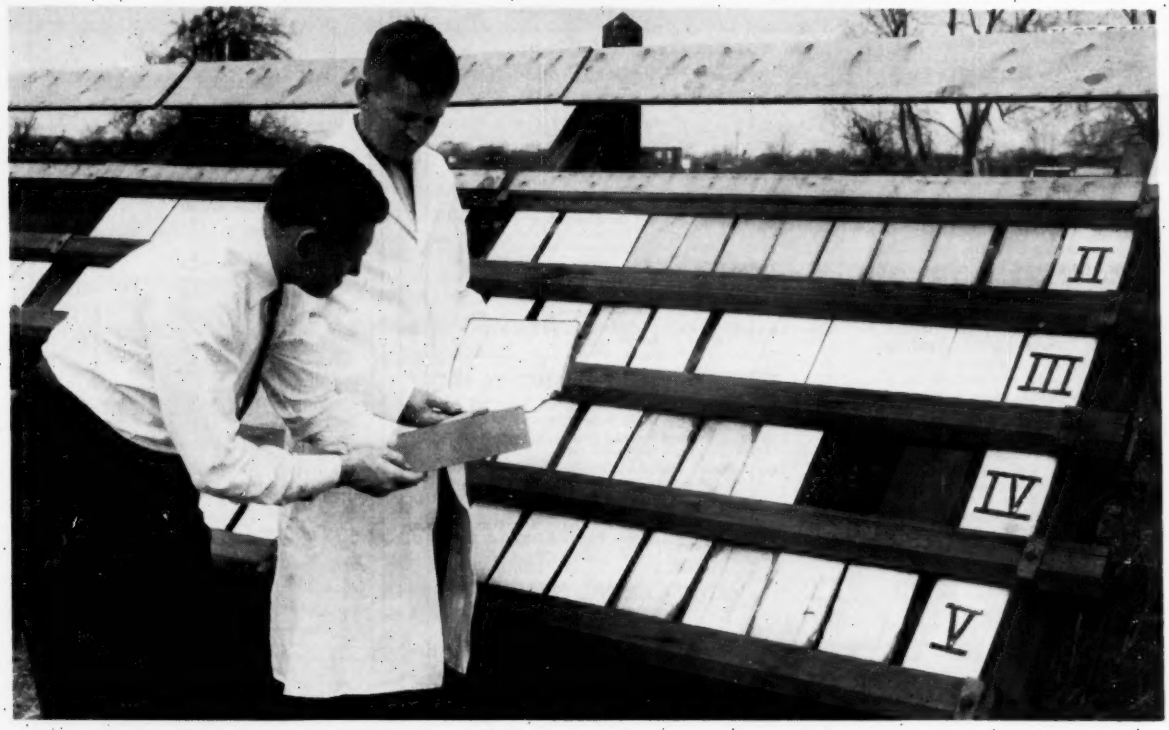

Alkyd-based exterior paints may be one way resin makers can recoup sales lost to latex paint bases.

On Trial: Sales Appeal of Alkyd Resins

Last week's acrylic paint-base price cuts re-emphasize the problems of alkyd paint resin salesmen. And sales managers have decided it's time for strong measures to better their sagging competitive position. They're calling for everything from more research to stepped-up promotion.

What has pushed them into this position? Consumption of alkyd resins for protective coatings has tumbled. It hit some 360 million lbs. last year *(see table, p. 72)*, compared with '55's peak of 491 million lbs.

The whole paint picture is, of course, somewhat dull this year—total gallonage of paints, varnish and lacquers used is expected to slump to less than 570 million gal. That's some 10 million gal. below last year's sales and a worrisome 139-million-gal. drop from '55's record-high demand.

But particularly aggravating to alkyd sales teams is that, during this slump in protective-coatings business, sales of latex-based (also called water-based) paints (butadiene-styrene, polyvinyl acetate, or acrylic) have steadily increased. Their sales this year are expected to be more than 65 million gal., at least 13% of the total surface-coating market. Six years ago, water-based paint sales supplied just 4% of this over-all market.

That's why alkyd resin producers are going all-out, not only to maintain their present sales position, but also to regain sales lost to latex paints.

Planned Attack: The alkyd resin industry is using a three-pronged attack on sales competitors:

- Intensive research and technological improvements.
- Strong sales and promotional drives.
- Opening up new markets for alkyd resins.

The growing success of aqueous interior-surface finishes, with their decided easier-to-cleanup advantages, has just about chased alkyd resin paints from the "do-it-yourself" market. But part of the alkyd resin industry has not been idle during this encroachment. Today, there are at least two alkyd emulsions for water-based paints, American Cyanamid's Cyaqua and Reichhold's Synthemul. And more are on the way.

The alkyd emulsion research is not limited to interior paints; it now concerns industrial finishes. The auto industry, seeking a surface coating that doesn't require a flammable solvent, has turned to water-based paints. Ford and Chrysler are already using a water-thinned paint as a primer on some automobile models. But these are latex paints, and producers of alkyds are now concentrating a great deal of research effort on developing an alkyd emulsion paint for use as a primer and as the final coating of autos.

Another goal of alkyd research is the development of paints with less complicated formulation. Sales pitch to paintmakers would be less material to handle, consequent cutback in inventories.

Research is also aimed at finding

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SALES

Latex Sales Up; Alkyds Down

	Paint Sales (million gallons)		Alkyd Coatings (million pounds)
	All Paints	Latex Paints	
1951	490	10	441
'52	500	18	422
'53	526	25	410
'54	538	34	410
'55	599	43	491
'56	587	54	413
'57	580	60	360*

*Recently released annual U.S. Tariff Commission figures on production and sales of plastics and resins show alkyd resin output for protective coatings in '57 at 496 million lbs. However, commission spokesmen state that '57's figure is not comparable to past years, since a large number of companies that have produced alkyd resins for some time made their first report to the commission last year.

faster-drying alkyd-based paints, with improved touch-up properties, better one-coat coverage, better "holdout" over porous surfaces, reduced odor, improved alkali resistance.

Promotional Pickup: Sales managers have been even more active in pushing a strong promotional campaign for alkyds. One example—Allied Chemical's alkyd group prepares publicity for paint companies that buy its alkyd resins. This promotional material doesn't mention Allied, emphasizes instead how alkyd paints are superior to other types.

"We must give alkyd paint sellers—retailers—enough ammunition in the way of facts, sales approach and sales pitch to buck the tide of competitive surface coatings," says an alkyd resin producer. This seems to be the general opinion of most producers; they must get the paint retailer to plug the alkyds. To do this, they must educate, encourage and promote these salesmen.

In a recent meeting of Vehicle Manufacturers Assn., a number of ideas to stimulate sales of alkyd resins were broached. Some proposals stressed the glamor approach—female sales personnel for alkyds are being seriously considered by one major producer.

Other ideas put forth were over-all package design improvement, new packages, such as plastic containers, squeeze-tube containers. Most leading resin makers, however, believe that these approaches would stimulate alkyd sales comparatively little.

New Markets: Sales managers have also been active in stepping up a drive to find new outlets for the resins. At present, a large portion of alkyd resin paints are tailored for specific industrial uses.

Resin makers are also eyeing the lush market of outdoor painting of private homes, an outlet dominated by linseed-oil-based paints. The trade estimates that some 7 million private dwellings and buildings will need painting this year.

Other new product areas for alkyds include floor wax, paper, textiles, cosmetics, leather.

With research, new markets and a strong promotional campaign all getting close attention, the alkyd resin industry and its salesmen feel there's clearly an upturn ahead for sales of their product. It's also clear that consumers of alkyd-based paints will profit from the new technological improvements springing from these efforts.

DATA DIGEST

• **Polyethylene Resins:** Various uses of Tenite polyethylene resins are covered in a 36-page book. Numerous illustrations show the versatility of the plastic and its wide range of application in housewares, toys, appliances, paper coating, insulation. Brochure has six sections for each of the basic uses of the plastic: molding, pipe, film, coatings, blowing, wire and cable covering. Chemical and physical properties are provided. Eastman Chemical Products (Kingsport, Tenn.).

• **Polyurethanes:** Several brochures on rigid, semirigid and flexible Stafoam polyurethanes are now available from American Latex Corp. The literature includes description of use, processes, formulations, physical properties, and comprehensive engineering data. ALPCO (Hawthorne, Calif.).

• **Methyl Chloride:** A new brochure discusses the physical, chemical properties, specifications, toxicity, and applications of methyl chloride. Ansul Chemical Products Dept. (Marinette, Wis.).

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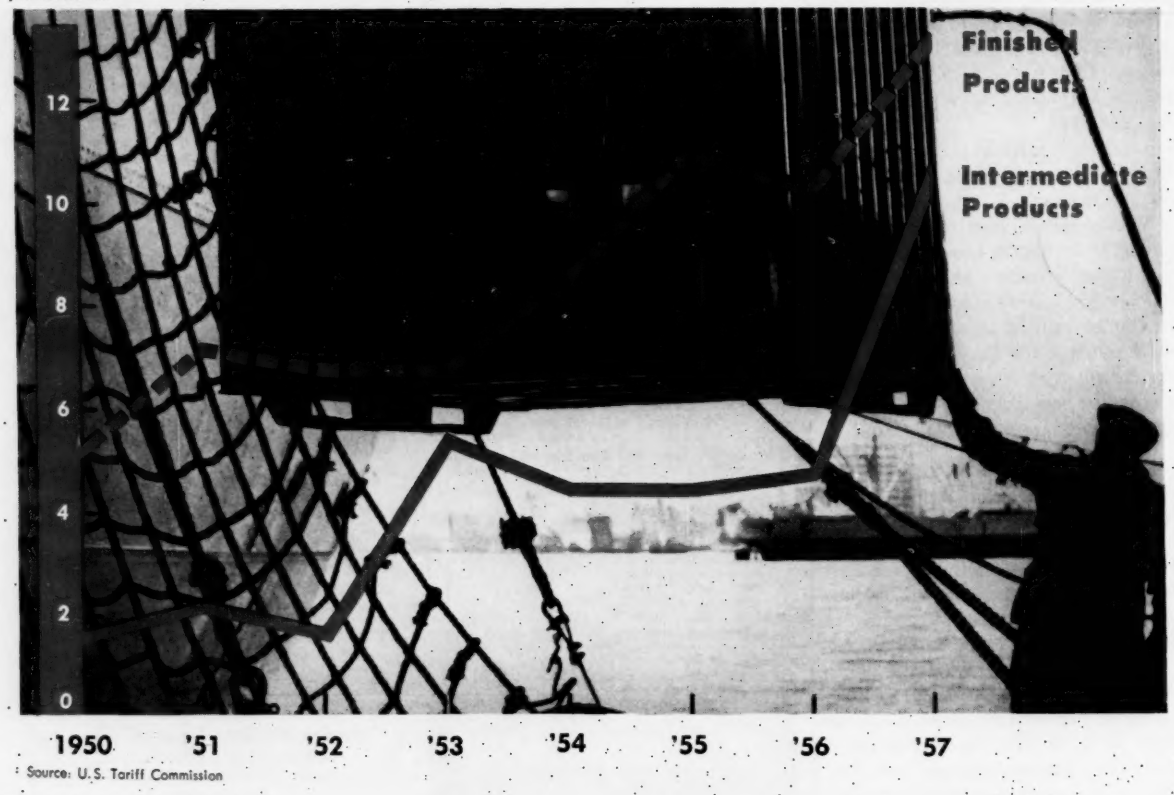

Source: U.S. Tariff Commission

New Ammunition for Tariff Skirmish

Proponents of higher tariffs now have a sharper axe to wield—recently released government figures show surging imports of coal-tar chemicals in '57.

Imports of coal-tar intermediates and finished chemical products last year had a foreign invoice value of $24 million. That's 58% more than the '56 value, $15.2 million, and well over three times '50's $6.9 million.

The '57 imports of intermediates alone, compared with the '56 value: $10.7 million vs. $4.8 million. In terms of quantity, the most important intermediates were refined naphthalene (1.1 million lbs.), adipic acid (1 million lbs.), phthalic anhydride (0.79 million lbs.).

Drugs Healthiest: Imports of finished coal-tar products were valued at $13.3 million in '57, also a substantial gain over '56's $10.4 million. For the first time on record, coal-tar medicinals and pharmaceuticals was the largest tonnage group, edging out dyes. Drug value last year: $5.8 million (44% of total value of finished products). Incoming coal-tar dyes last year were valued at $5.6 million, 42% of total value.

Also highlighted, in the federal data, imports of pesticides and other agricultural chemicals scored substantial gains: 2.8 million lbs. in '57, compared with 0.4 million lbs. in '56.

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